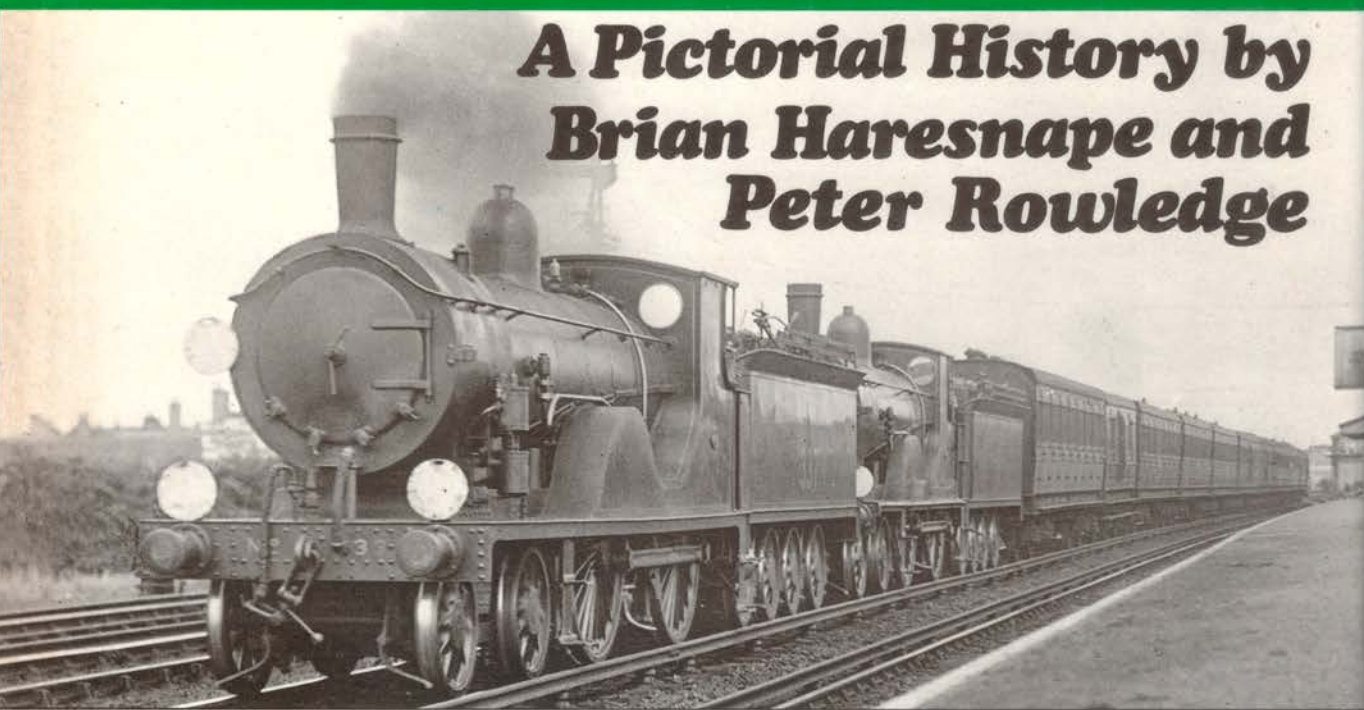
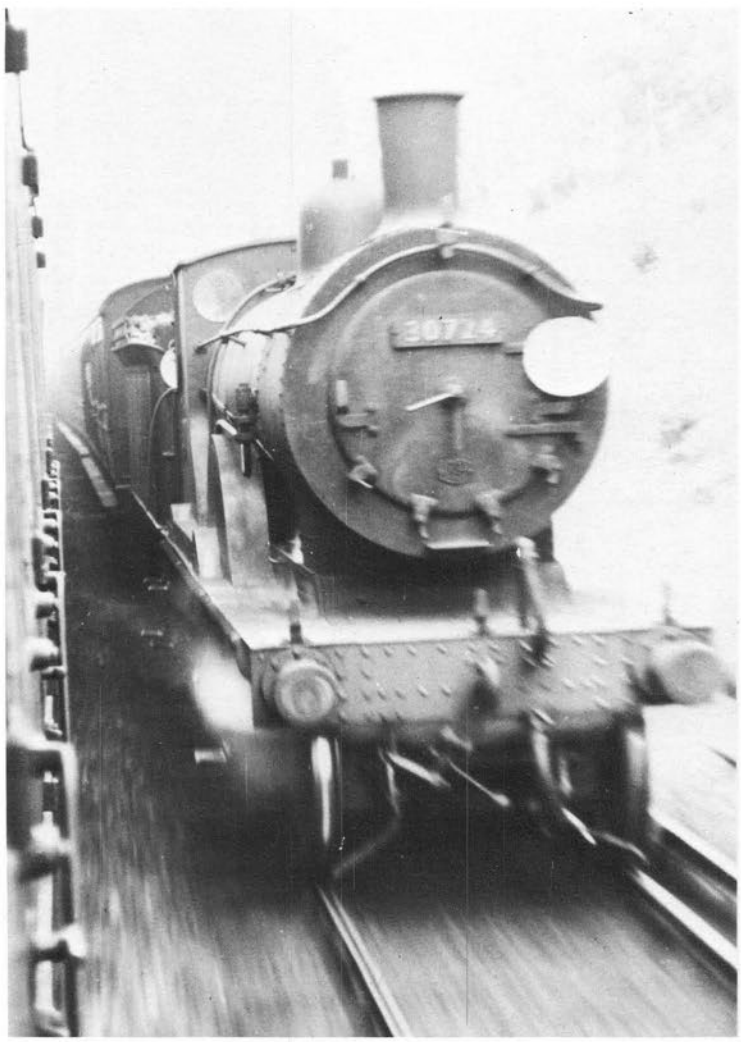
Drummond Locomotives

A Pictorial History by Brian Haresnape and Peter Rowledge



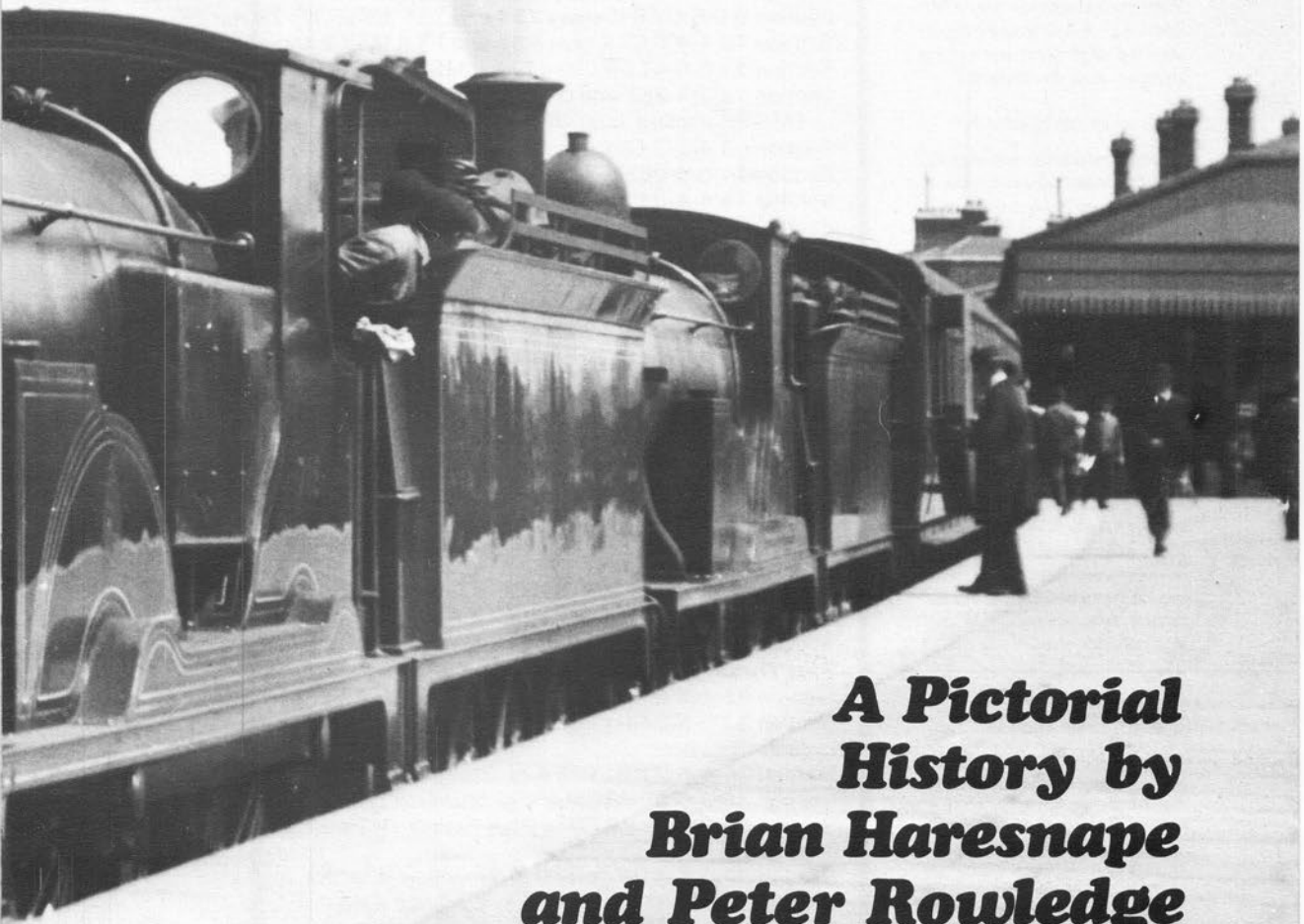
Drummond Locomotives



Previous page: Seen from the window of a passing train (the 6.00pm ex Waterloo,) Class T9 4-4-0 No 30724 is working hard on the 5.54pm ex Waterloo, photographed sometime in 1955. *A. G. Cooper*

Below: A pair of Dugald Drummond's LSWR 4-4-0 'Greyhounds' at Salisbury, with No 718 leading. *Brian Haresnape collection*

Drummond Locomotives



A Pictorial History by Brian Haresnape and Peter Rowledge

LONDON
IAN ALLAN LTD

Front cover, top to bottom:

A particularly interesting photograph of two of Drummond's Class T9 'Greyhounds', after modification by Eastleigh with superheaters. The leading engine No 337, is a 'wide-splasher' version of the class, the one behind, No 332, is the other version; both are superheated and have 'Water Cart' tenders. *F. R. Hebron*

Working a stopping train, GSWR Class 137 4-4-0 No 330 shows well the large dimensions of the design. *Real Photographs*

Back cover, top to bottom:

Drummond's NBR version of the LBSCR Class C goods engine, but slightly more powerful. No 469 was one of the final batch built by Neilson in 1877.

Lambie built some further locomotives, with revised boiler design, after Drummond's departure and these were known as the NER '13' class, being Nos 13/8.

HR class 1P 0-4-4T Nos 55051/3, stationed at Helmsdale, for use on the Dornoch branch. In her first BR livery of plain black with white numerals and Gills sans lettering on the tanksides, No 55053 is seen here at The Mound in 1951. *P. B. Whitehouse*

First published 1982

ISBN 0 7110 1206 7

All rights reserved. No part of this book may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photo-copying, recording or by any information storage and retrieval system, without permission from the Publisher in writing.

© Brian Haresnape and Peter Rowledge, 1982

Published by Ian Allan Ltd, Shepperton, Surrey; and printed by Ian Allan Printing Ltd at their works at Coombelands in Runnymede, England

Contents

Introduction 5
Part One: Dugald Drummond in Scotland 1875–1895 15
Section 1 0-6-0T NBR Class 165 (LNER J82) 19
Section 2 0-6-0 NBR Class 100 (LNER J32) 20
Section 3 2-2-2 NBR Class 474 21
Section 4 4-4-0 NBR Class 476 (LNER D27 and D28) 22
Section 5 0-4-2T/0-4-4T NBR Class 157 (LNER G8) 24
Section 6 4-4-0T NBR Class 494 (LNER D50) 25
Section 7 0-6-0 NBR Class 34 (LNER J34) 26
Section 8 4-4-0T NBR Class 72 (LNER D51) 28
Section 9 0-6-0 CR Classes 294 and 711 (LMSR/BR 2, later 2F) 30
Section 10 4-4-0 CR Classes 66 and 13 (LMSR 2, later 2P) 34
Section 11 0-4-4T CR Class 171 (LMSR1, later 1P) 38
Section 12 0-4-2ST and 0-4-0ST CR Classes 262 and 264 LMS/BR unclass, later OP and OF) 40
Section 13 4-2-2 CR Class 123 (LMSR 1, later 1P) 42
Section 14 0-6-0ST CR Class 385 (LMSR 3, later 3F) 45
Section 15 4-4-0 CR Class 80 (LMSR 1, later 1P) 47
Section 16 0-6-0ST CR Class 272 (LMSR unclass, later OF) 48
Part Two: Dugald Drummond on the LSWR 1895–1912 49
Section 17 0-4-4T LSWR Class M7 (BR 2P) 54
Section 18 0-6-0 LSWR Class 700 (BR 4F, later 3F) 60
Section 19 4-2-2-0 LSWR Classes T7 and E10 64
Section 20 4-4-0 LSWR Class C8 66
Section 21 4-4-0 LSWR Class T9 (BR 2P, later 3P) 67
Section 22 4-2-4T LSWR Class F9 72
Section 23 4-4-0 LSWR Classes K10 and L11 (later BR 1MT) 73
Section 24 4-4-0 LSWR Classes S11 and L12 (BR 2P) 78
Section 25 4-6-0 LSWR Classes F13 and E14 82
Section 26 4-6-0 LSWR Class G14 84
Section 27 0-4-0T LSWR Class K14 — later B4 (BR 0F, later 1F 85
Section 28 4-6-0 LSWR Class P14 87
Section 29 4-6-0 LSWR Class T14 (BR 4P) 88
Section 30 4-4-0 LSWR Class D15 (BR 3P) 91
Section 31 Steam railcars and motor train engines 94
Part Three: Peter Drummond in Scotland 1896–1918 101
Section 32 4-4-0 HR Class C or 'Ben' (LMSR/BR 2, later 2P) 104
Section 33 0-6-0 HR Class K or 'Drummond Goods' (LMSR/BR 3, later 3F) 107
Section 34 4-6-0 HR Class A or 'Castle' (LMSR , later 3P) 109
Section 35 0-6-0T HR Class V or Shunting Tank (LMSR 2, later 2F) 111
Section 36 0-4-4T HR Class W or Passenger Tank (LMSR/BR unclass, later 1P) 112
Section 37 4-4-0 HR Class U or 'New Ben' (LMSR2, later 2P) 113
Section 38 0-6-4T HR Class X or 'Banking' (LMSR 4, later 4P) 116
Section 39 0-6-0 GSWR Class 279/71 (LMSR 3, later 3F) 117
Section 40 4-4-0 GSWR Class 131/331 and 137/325 (LMSR 3, later 3P) 118
Section 41 2-6-0 GSWR Class 16/51 (LMSR 4, later 4F) 120
Section 42 0-6-2T GSWR Class 45/11 and 1 (LMSR/BR 3,later 3F) 122
Section 43 0-6-0T GSWR Class 5/322 (LMSR 2, later 3F) 124
Appendix: Named Locomotives 126
Bibliography 128

Introduction

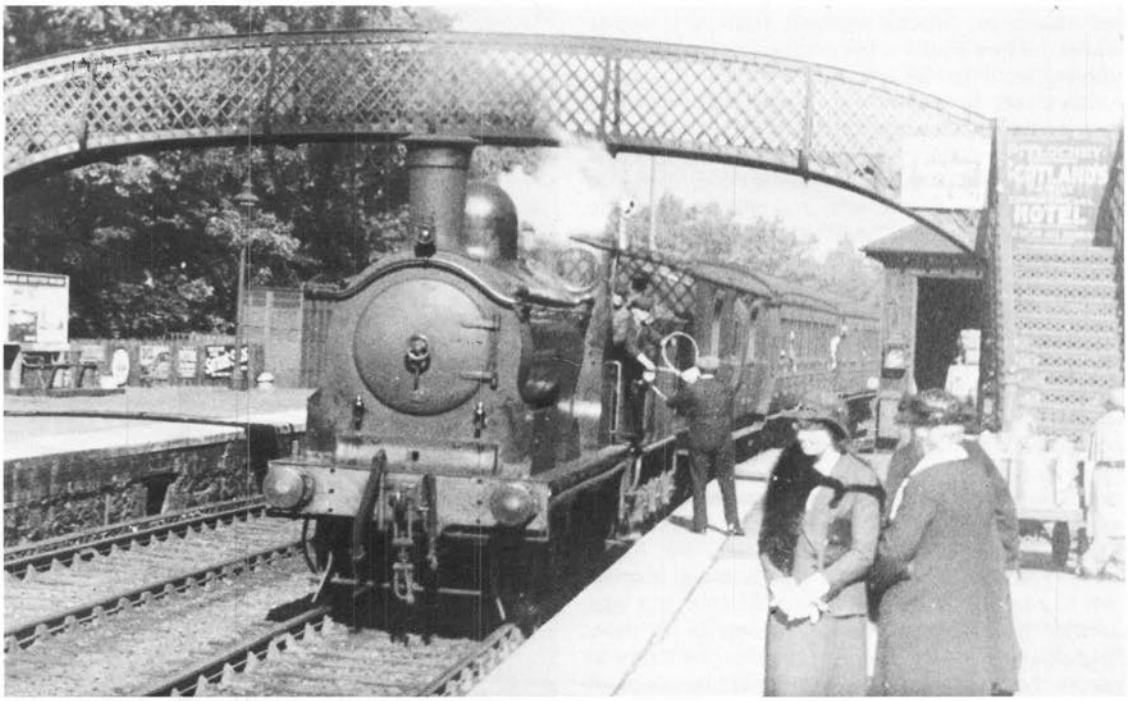
For the second time in this 'Locomotive' series I am fortunate in having as my co-Author Peter Rowledge, whose patient research work has made a deep impression upon the content of this book. Indeed, to present the story in words and pictures of the remarkably numerous classes of locomotive produced by the Drummond brothers is in itself no easy task, and I am certain that the reader will find this chronological presentation an aid to recognition. It is not the first attempt to do so, although I am reasonably certain it is the first book to present all the work of both men in a single volume. We have linked together the individual achievements of Dugald and Peter Drummond, whose locomotives were, at one stage of British steam locomotive history, to be found as far afield as (virtually) John O'Groats and Lands End — well, Padstow at least!

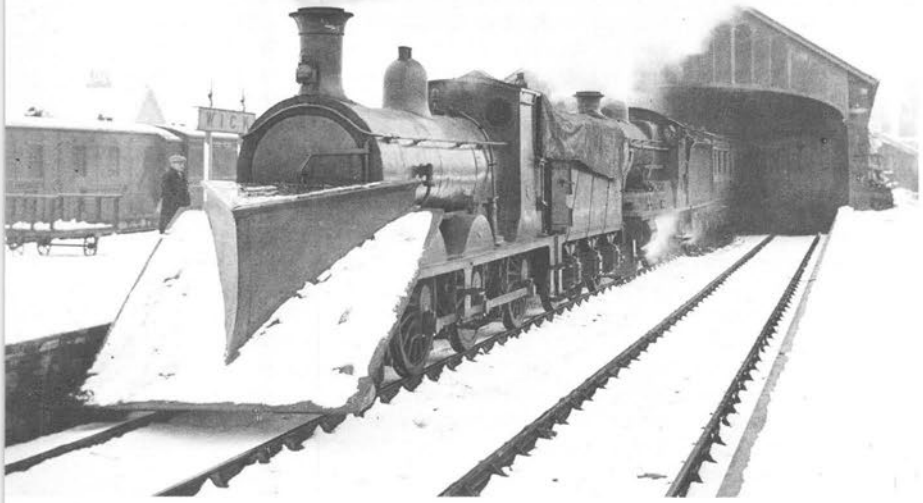
The name Drummond surely ranks high amongst the list of those 19th century immortals such as Stroudley, Dean, Johnson, and others who because of the care they took to produce locomotives which were veritable works of art, as well as feats of engineering, have become known as the 'Artist Engineers'.

Certainly, a Drummond locomotive — whether it be by Dugald or Peter — had a style which has become associated with their name. To some extent this style was the result of the older brother, Dugald's, undoubted admiration for the designs of William Stroudley and Peter, in his turn, echoed this by imitating Dugald's work. There was a special quality of robustness and finish to their engines, however, which may perhaps be ascribed to the training in Scottish engineering — then without peer in the world — which both men received early in their careers.

It was the habitude of Victorian engineers to serve their apprenticeship in the works of one company and then most probably move on to another to gain experience, all the while seeking posts which carried promotion. Thus Dugald and Peter both served for more than one railway — as is described in the introduction to each part of the book. In this manner much cross-fertilisation of ideas and practices took place. Sometimes, the arrival of a new man to take charge of the locomotive affairs of a company was greeted with

Below: Summer period piece at Pitlochry, in June 1932, with former Caledonian Railway 'Jumbo' 0-6-0 No 17454 arriving; note the single line tokens being exchanged.
Peter Rowledge collection



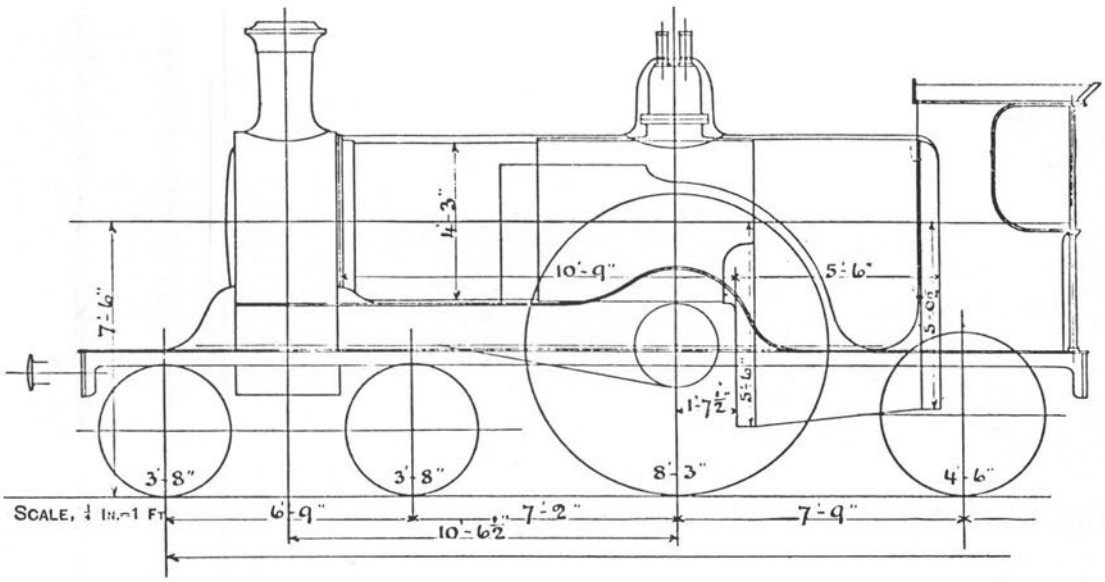


Left: A reminder of the tough working conditions that the Scottish engines of both Dugald and Peter had to endure in wintertime. Photographed at Wick on 1 March 1924, Class K 0-6-0 No 138 fitted with snowplough and sheeted tender leads No 74 on the 2.30pm Wick-Inverness train. *LCGB Ken Nunn collection*

Below: The preserved Caledonian Railway Single No 123 seen leaving Edinburgh Princes Street with a return excursion to Glasgow on Easter Monday 1965. *Eric Oldham*

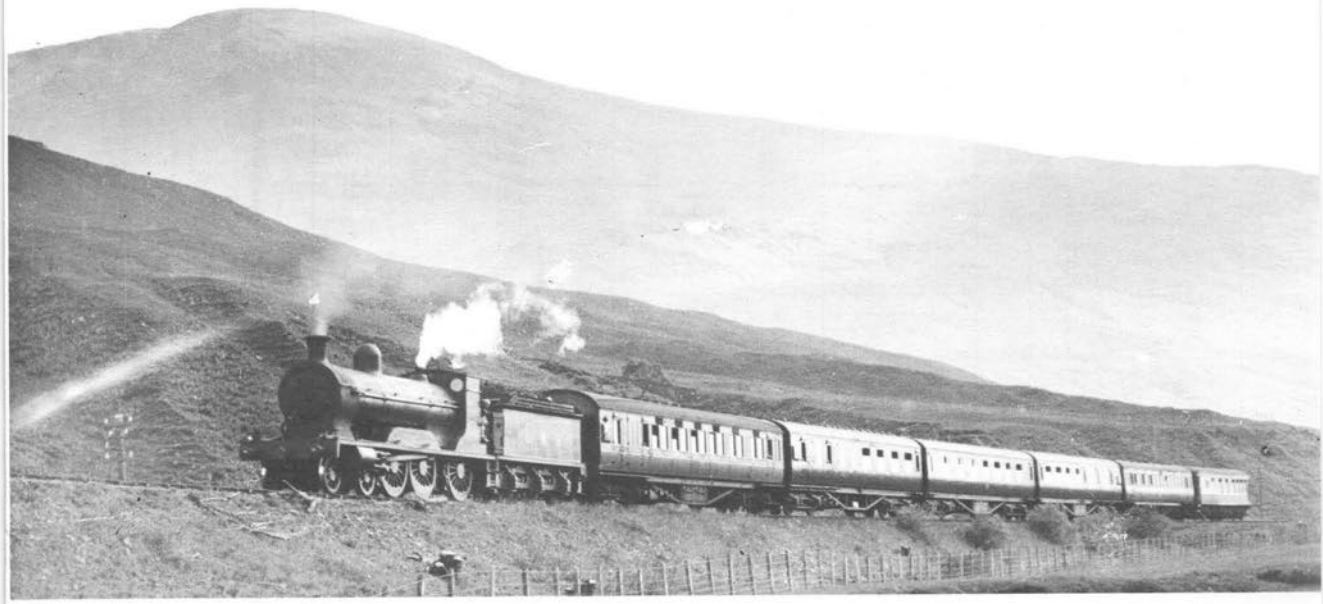
much suspicion and resentment; the drivers in particular were very loyal men! A good example of this was Dugald's arrival at Nine Elms on the London & South Western Railway. His first design for the LSWR was the classic 'M7' class 0-4-4T, and this was directly evolved from the earlier successful and similar tank engines he had built for both the North British and the Caledonian Railways. It was surely so well-proven a type that no objections could be raised by the LSWR men? Alas this was not the case, because Dugald changed the traditional siting of the driver on the right-hand side of the footplate to the left, and this alone made both he and the new engines quite unpopular to begin with!

Typical hallmarks of all the Victorian locomotive engineers were the style and shape of the chimney and dome, and the design of the cab and tender. The final embellishment, in the form of an extremely well finished livery, also carried the 'signature' of the engineer. Often the arrival of a new locomotive engineer signalled a change of livery — either complete, or in details — and the Drummonds were no exception to this practice, as the reader can perceive from study of the illustrations. Dugald Drummond's first livery, for the North British Railway, for example, clearly owed a great deal to Stroudley's LBSCR colour scheme, but was sufficiently different to be recognised as his own. The railway modeller can give great authenticity to a scale model by application of the subtleties of an



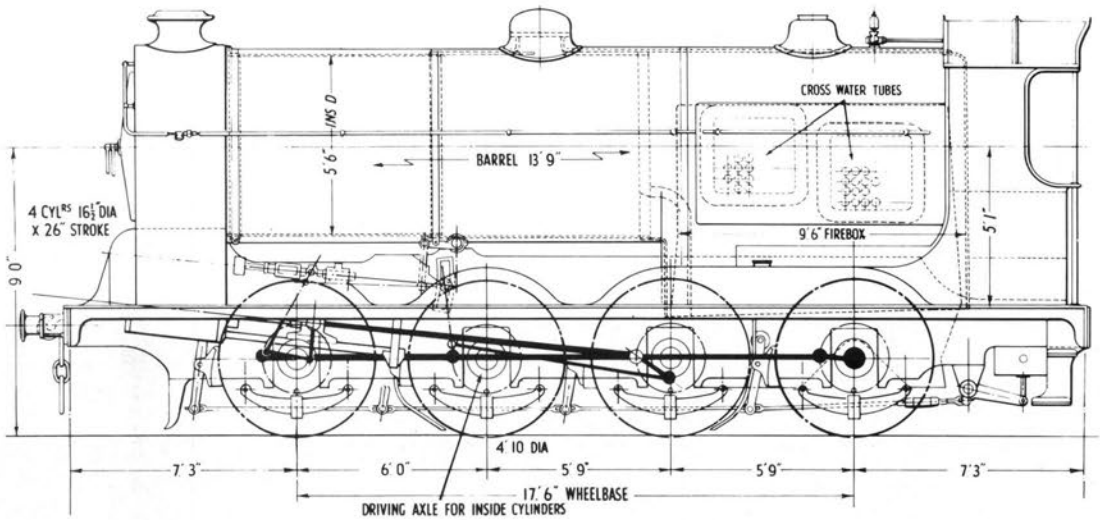
Above: The drawing in Messrs Neilson's sketch book, now in the Mitchell Library Glasgow, showing their proposal for an 'exhibition engine' with outside cylinders and 8ft 3in diameter driving wheel. *Mitchell Library*

Below: If Dugald's attempts to produce a successful large 4-6-0 locomotive for the LSWR were marked by less than his normal standards of achievement, the same certainly cannot be said of Peter Drummond's earlier 4-6-0 for the Highland Railway, the 'Castle' class of 1900. This design in fact originated from the hand of David Jones, Drummond's predecessor at Lochgorm, and Peter made only superficial changes to it. In LMSR days 'Castle' class No 14686 (ex-HR No 35) *Urquhart Castle* is seen on a Glasgow-Oban special near Loch Earnhead, in 1936. *F. R. Hebron/Rail Archive Stephenson*



Above: An acute locomotive shortage led the French State Railways (ETAT) to place an order with the North British Loco Co for 50 of the 4-6-0 'Castle' class — certainly a tribute to their sound design. Etat No 230-338 is seen at Achères, on a Paris-Mantes stopping train which includes some double-deck coaches. They survived in France until the mid 1930s. Their plain green livery was not unlike that of their HR counterparts. *O. J. Morris/Rail Archive Stephenson*

Below: Dugald Drummond's LSWR proposal for a heavy goods 0-8-0 engine, with four cylinders.



original livery scheme, sadly many otherwise excellent models are quite spoiled by incorrect liveries.

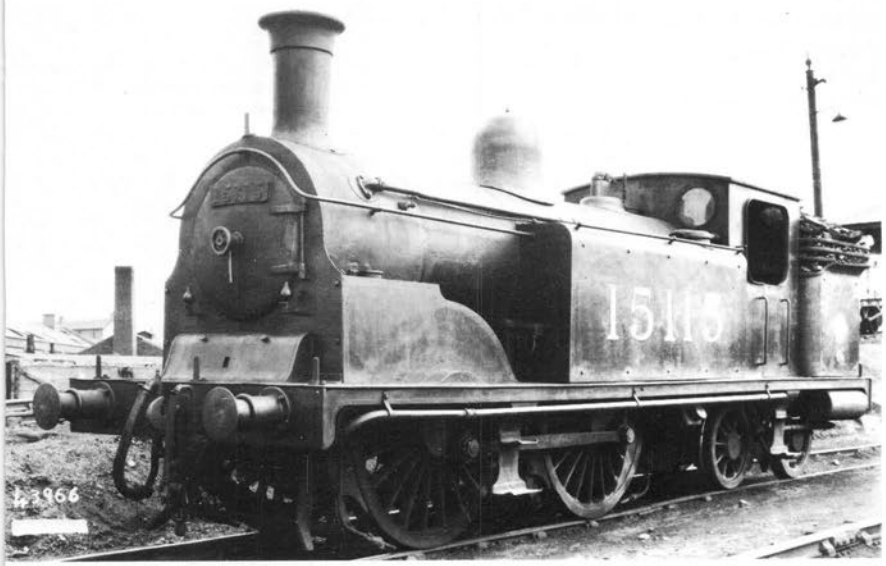
The locomotives of the brothers lived on in many cases for a good many years after the deaths of their creators. The name Drummond was respected in their own lifetimes, and it has also lived on. Happily a few locomotives have joined the select ranks of preserved steam. Some examples which deserved to be included have gone forever, but we are fortunate to have a permanent record of these in the form of photographs, drawings and in some cases models. Perhaps there will be more fine scale models made in years to come, to add to our understanding of the work of these two men. We would like to think so.

For many years the story was circulated in railway enthusiast circles that the Caledonian Railway 'Single' No 123 was *not* designed by Dugald Drummond but by the locomotive builders Messrs Neilson, who then handed the completed locomotive over to the railway. Thanks to the researches of Mr A. G. Dunbar, published in the Journal of the Stephenson Locomotive Society, we now know this to be untrue. Mr Dunbar unearthed the Neilson sketch proposal in the Mitchell Library, Glasgow, with the help of the City Librarian and his staff. This sketch was what the firm proposed as an 'exhibition engine' and bore some resemblance to the Stirling GNR 4-2-2 type but with typical Caledonian chimney, cab, dome and splashers, etc. No doubt these stylish features were shown in order to try and impress Dugald and the CR directors.

The use of *outside* cylinders, and a single driving wheel of no less than 8ft 3in diameter, would one suspects have caused some raised eyebrows in Dugald's drawing office, and certainly went against the grain of their current practice. What Mr Dunbar suggests is almost certainly true, namely that the CR probably *in conjunction* with Messr Neilson finalised a design for construction, having rejected the original proposal. As Mr Dunbar observes, it cannot be denied that the finished product was 'pure Drummond', and certainly points to Dugald having taken a personal interest in the whole affair.

An interesting phase in the story of any locomotive is when it falls into the hands of another owner, or another engineer; after the demise or retirement of the designer, or upon the take-over of one railway company by another. In the case of Dugald's engines for the LSWR in particular, the changes made by both Urie and Maunsell in later years, considerably affected their appearance in some instances, if not always their performance. Sadly all attempts by these two to make something of his big 4-6-0 engines were by no means to much avail, but the latterday form and performance of the 'T9' 'Greyhound' 4-4-0 class was of considerable merit.

Mention of the 4-6-0 locomotives is a reminder that Dugald Drummond was essentially of the late Victorian school of engineering (and so was Peter) and it was only when Dugald tried to produce six-coupled mixed traffic and express passenger engines later on in his career, for the LSWR, that he failed to make a success of his designs. He belonged essentially to the world of



Left: When J. Lambie succeeded Dugald Drummond as Locomotive Engineer of the Caledonian Railway, he produced some new locomotive classes clearly derived from Dugald's designs; amongst these were the Class 19 0-4-4Ts of 1895 and LMSR No 15115 is seen here. *Real Photographs*

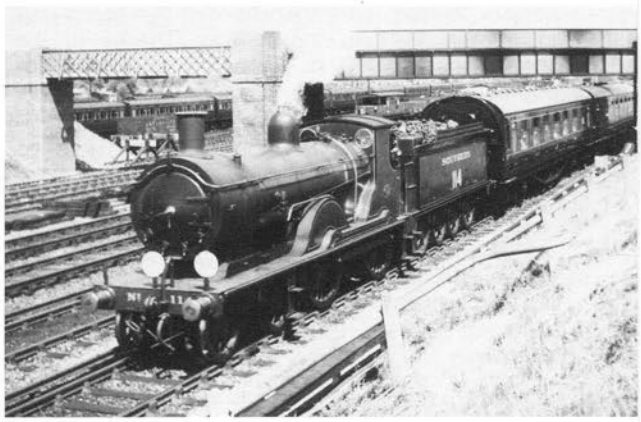
Left: R. W. Urie decided to try to improve the best version of D. Drummond's rather lamentable series of 4-6-0 classes for the LSWR. The results brought about a fair measure of success, but at the expense of producing one of the ugliest locomotive front ends ever to grace British rails (perhaps only beaten by Bulleid's wartime 'Q1' 0-6-0 goods engines!) Class T14 4-6-0 No 444, in the wartime black SR livery, is prepared for the road. *Ian Allan Library*

simple straight forward inside-cylindered 4-4-0, 0-6-0 and 0-4-4T engines, and his expertise was renowned with these classic types. The big multi-cylindered 4-6-0 types belonged to the new (Edwardian) world of men such as G. J. Churchward, who had a vision of the future form that the steam locomotive must take — a shape far different from the elegance of the Drummonds and their contemporaries! Significantly, Dugald's last design before his death, the big Class D15, was a reversion to the inside-cylinder 4-4-0 layout, a most imposing and capable example, it must be emphasised.

A fascinating aspect of the design work of any period of steam locomotive history is the study of 'might-have-beens'; design proposals that did not come to fruition. Fortunately some Drummond ideas have survived in drawing form.

Five of Peter Drummond's HR proposals are known in detail as drawings still exist. Briefly they are:

1: Enlarged 4-4-0 of 1899, based on the 'Ben' class, having a bigger boiler and a longer wheelbase.
2: Even bigger 4-4-0 of 1901, which remarkably anticipated not only his engines for the GSWR, but also Dugald Drummond's 'D15' of 1912.
3: 0-8-0 of 1902, in fact two versions being prepared, the second with shorter boiler tubes, based apparently on the recently built CR '600' class, having a similarly spread but shorter wheelbase, but a much larger boiler.
4: Two ideas for 0-4-4T engines, a 1902 version being rather similar to the CR '104' class of 1899, and one of 1904-5 which closely resembled the LSWR 'M7' class.



Above: The work Urie and Maunsell did upon Dugald's Class T9 4-4-0 'Greyhounds', giving them superheaters and extended smokeboxes with quite shapely stovepipe chimneys, further improved what was already an excellent locomotive. No 114 is seen here at the head of a special through working of LMSR stock in August 1938, photographed passing Woking Junction. (One of the SR's bogie brake vans visible in the background, above the tender.) *G. J. Jefferson*

5: A mixed traffic 4-6-0 proposed in 1907, its coupled wheel of 5ft diameter and short wheelbase strongly suggesting that it was considered for the Kyle of Lochalsh line.

Just what the HR would have done with the larger engines, in addition to its existing stock is best left to the imagination (although undoubtedly it would

Above: Derby influence upon early LMSR locomotive affairs was the direct reason for the early demise of so many so-called 'non-standard' classes of locomotive, especially in Scotland. Peter Drummond's designs came into this category. Fortunately for the railway enthusiast, a few engines were sold out of service to industrial concerns, and some of these out-lasted their LMSR brethren. Seen here is an ex GSWR 0-6-2T, Class 45 of 1915, still working hard (on the right) at the NCB's Ashington Colliery on 1 June 1953. Also in this view of the Northumberland Colliery is a line-up of locos on shed, including (third from the left) an ex LBSCR Stroudley Class E1 0-6-0T. *Harold D. Bowtell*

have been glad of such power had it been feasible then to forecast World War 1), particularly in view of what happened to Smith's 'River' class in 1915 and the intended loan of the ROD 2-8-0 engines in 1919. The copy of the 'M7' class might well have been considered more for banking duties and was perhaps the foundation of the 0-6-4T of 1909. Other ideas known of were a 4-6-0 of 1903 with a side window cab and very large six-wheeled tender of 4,400gal, a steam railcar of 1904, a four-cylinder type in 1905 and later a further passenger class in both Atlantic and six-coupled versions, but no technical details have survived.

In the *Railway World Annual 1981*, an article by D. W. Winkworth reveals that Dugald Drummond contemplated a large 0-8-0 goods engine with four cylinders; with Walschaerts valve gear. The boiler was identical to his Class E13 and E14 4-6-0s, but the cylinders would have been placed under the smokebox as on the Class T14 4-6-0s. The drawing appears therefore to date from about 1907 and is *later* than Peter Drummond's 0-8-0 proposal.

Neither my co-author Peter Rowledge nor I belong to that fortunate generation, (many of whom are still alive) who can remember the Drummond engines in late pre-grouping and early grouping days. Our own experience was with them in their final years prior to nationalisation, and in BR ownership. As with the vast majority of steam locomotives at that final stage before the changeover to diesel and electric traction, they suffered from a good deal of neglect and lack of attention (in common with even the latest Standard types) and yet somehow the remaining examples soldiered-on. The earliest NBR designs by Dugald did not survive LNER ownership to become BR property, but most of his LSWR designs, inherited by the Southern Railway, still featured quite strongly on the stocklist at nationalisation. A mere handful of Peter's engines remained on the LMSR at this time, however, whereas Dugald's 0-6-0 goods engines the 'Jumbos' and 0-4-0ST 'Pugs', for the Caledonian Railway (also inherited by the LMSR) survived a good deal longer.

My earliest recollection of a Drummond locomotive was at the most unlikely location of Kensington Olympia station. Taken for a day out to one of those huge and claustrophic exhibitions which are a feature of the adjacent halls, I pleaded to be allowed some fresh air and to 'watch the trains' whilst the elders remained in the throng which milled from one display stand to the next. Safely placed on the platforms under the eye of a friendly ticket collector, and clutching my 'Brownie' box camera (purchased for 6d at a school Jumble sale) I proceeded to take my first railway photographs. Prints and negatives long since lost. First came a GWR pannier tank on some sort of milk train duty,

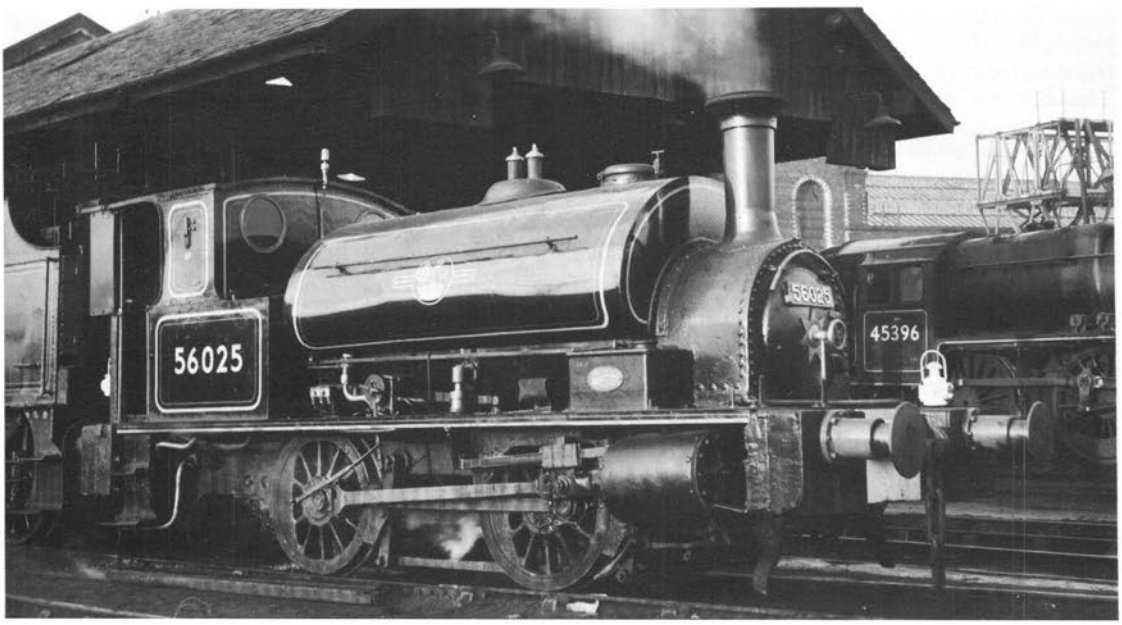
then a Riddles 'Austerity' 2-8-0 on a lengthy freight, with the engine still in WD livery (this was about 1947), and then came a most amazing sight. From the direction of Clapham Junction a train approached — contrasting strongly with the filthy dirty parcels vans was the locomotive itself, resplendent in highly polished postwar SR malachite green livery. I did not know it at the time, but what I was photographing was the Royal Engine, the 'T9' class 4-4-0 No 119; whilst engaged on a lesser duty! It positively sparkled and even my juvenile eye could detect a grace and a feeling of the thoroughbred — no wonder they were called the 'Greyhounds'.

Soon afterwards a family move to Wimbledon brought me in daily contact with many of the surviving SR Drummond engines. The '700' class 0-6-0 type was a regular visitor to the goods yards, and some of the 'M7' class were to be seen at Clapham Junction on Waterloo empty coaching stock turns (some of these were also finished in malachite green at this time). A memorable experience was to see the last of the 4-6-0 Class T14 'Paddlebox' thrashing through Wimbledon station on a goods turn, making much smoke and sound, but not a lot of progress. A remaining express duty for the big Drummond 4-4-0 engines at this time was the Lymington Pier boat train, which the local 'spotters' always eagerly awaited on a Saturday.

A holiday in Scotland soon afterwards revealed to my eyes that many very similar engines existed there! In particular I fell completely in love with the little Caley 'Pug' No 56025 which was used as the St Rollox works shunter. This had been repainted in fully lined-out BR black mixed traffic livery and was very beautifully polished and decorated. Sadly, we did not get to the Dornoch branch to see Peter Drummond's surviving 0-4-4T No 55053, which carried a similar livery in its final years. This was a very pretty little engine and it is a great pity it was not preserved.

A few SR Drummond engines featured in the abortive oil-burning scheme after World War 2, and these were put aside at Eastleigh when the scheme was axed. Many a 'spotter' made the pilgrimage to see these, armed with a day excursion ticket. The rows of 'dead' engines were near the sheds and here I also found the diminutive 'Dock tanks' which had recently been ousted from Southampton docks by the American-built wartime 'USA' class 0-6-0T, purchased by the Southern Railway. What a pity that preservation societies did not exist then as they do today.

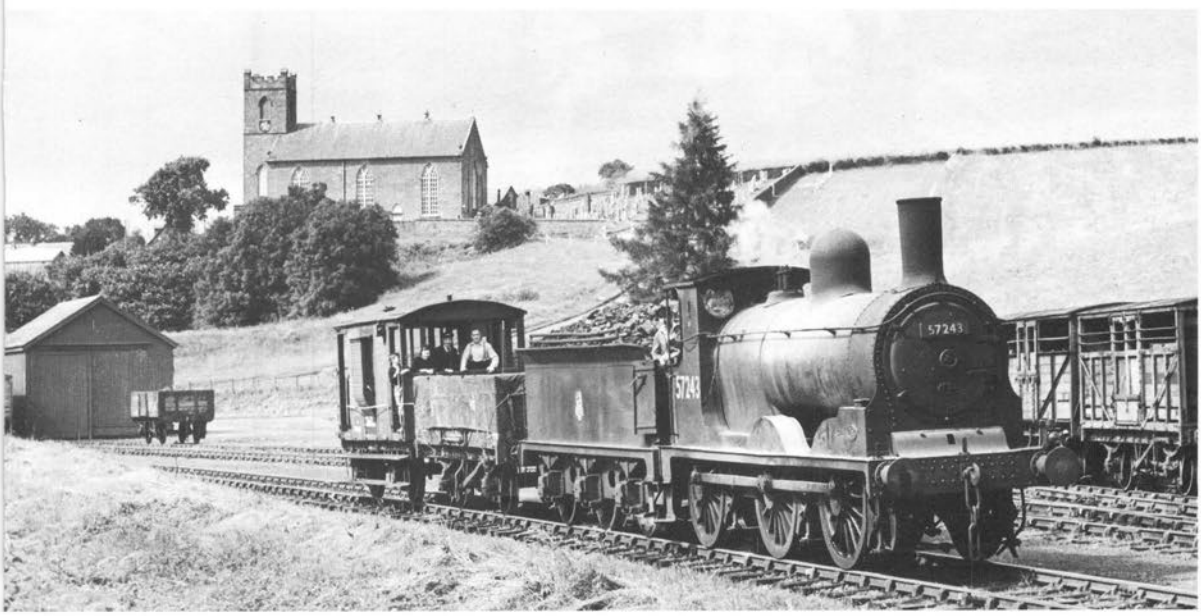
In their final years the remaining Drummond engines continued to give a good account of themselves, in particular the 'M7' class. The examples fitted for Push and Pull working were fleet of foot to the very end, and I well recall a hair-raising sprint from Grange Road to East Grinstead (High Level), just prior to dieselisation of this branch line from Three Bridges. The engine was propelling the train, always in itself in fascinating spectacle. The elegant 'Greyhounds' could be found in the byeways of Hampshire and Berkshire on



Below: Two of Dugald's Scottish classes, the 'Jumbo' 0-6-0 and the 'Pug' 0-4-0ST lasted rather better than Peter's designs under LMSR ownership, but his earlier engines for the NBR did not fare so well on the LNER. When nationalisation created the new Scottish Region in 1948, quite a lot of Dugald's ex Caledonian locomotives were still hard at work. A showpiece at St Rollox works, Glasgow was the 'Pug' 0-4-0T, BR No 56025, always kept in immaculate condition, and seen here in the works yard in December 1958. *W. S. Sellar*

Above: A worthy candidate for preservation which alas escaped the net, was the charming little branch line tank engine design, by Peter for the Highland Railway. The last of these, 0-4-4T No 55053 was not withdrawn until January 1957, lasting long enough to carry fully-lined BR black livery. It was the last HR engine to work on BR, and also the last example of Peter Drummond's design. No 55053 is seen hauling the one coach plus van consist of the 1.00pm from Dornoch to the Mound, in September 1956. *W. J. V. Anderson*

Below: The ex-Caledonian 0-6-0 'Jumbo' goods engines were exceptionally reliable and robust, and examples lasted in Scottish Region service until the end of 1963. Little changed over the years, except for the rather plain stovepipe chimney and the black BR livery, No 57243 is seen in the picturesque setting of Bankfoot, terminus of the Bankfoot Light Railway (just north of Perth) in July 1957, complete with 'unofficial' passengers in the brakevan! *W. J. V. Anderson*



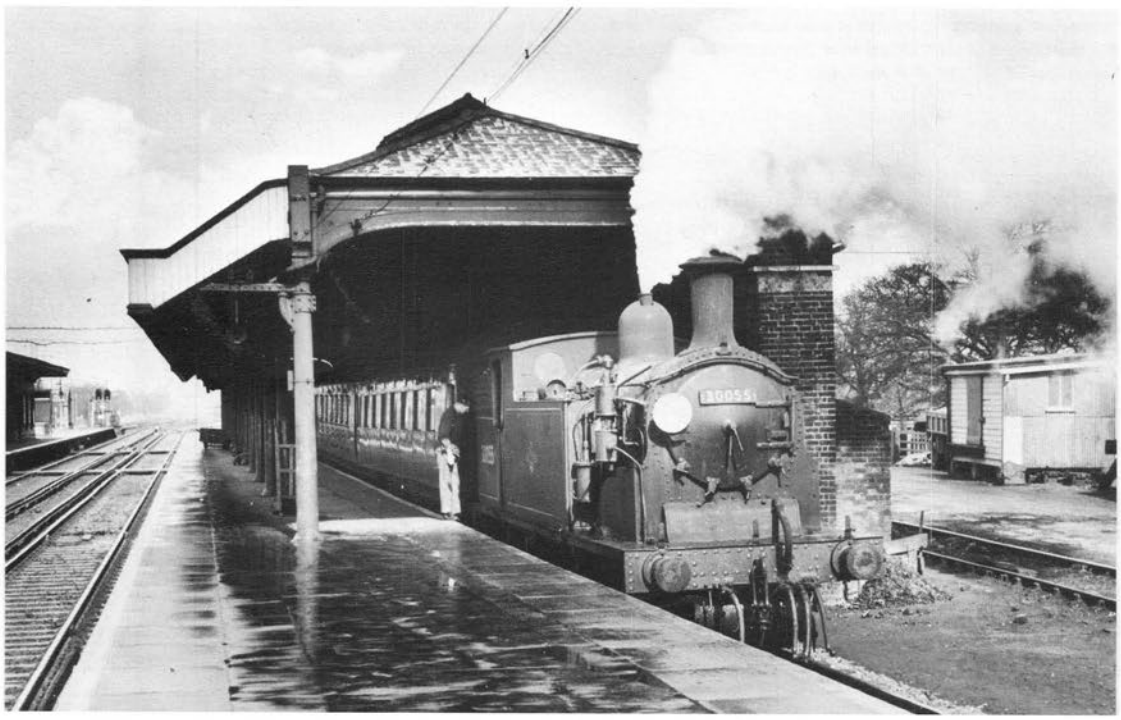
cross-country duties, and some were still down in the West Country, until the Standard Riddles 2-6-0 class 4MT type, displaced them. Given any opportunity a 'T9' could still justify the nickname, and it was a pleasant surprise when the SR repainted one in LSWR colours for use on specials (No 120, now preserved).

What a memorable day it was when the Bluebell Railway (then in its infancy) ran an excursion over the Central Section to Horsted Keynes, worked as far as Haywards Heath by *two* restored Drummond Locomotives! The spectacle of the Caledonian 'Single' No 123 coupled to the restored 'T9' in their respective blue and green liveries was enhanced by the perfect weather of the day. A suitable evening location to photograph the return working was Three Bridges. Here, in the low sunlight I saw for the first time in my life the grace and poise of a 'Single' at speed. No outside motion, just the large driving wheel seemingly effortlessly propelling the locomotive — a grand sight.

As in previous books in this series, we have the railway modeller in mind when illustrating the various classes, which are listed chronologically with the date of introduction of the first of the class. The number of sections this requires, in this instance, is so great that for space reasons we have departed from the normal format and the principal dimensions of each class are in tabular form at the introduction of each part, rather than in the individual sections.

Once again we are greatly indebted to Mr A. B. MacLeod of the Ian Allan Library, for assistance in the selection of illustrations, and for useful guidance during the compilation of this book. In addition we would like to thank the following who have also provided illustrations or assistance. The National Railway Museum; the Science Museum; the Mitchell Library, Glasgow and A. G. Dunbar Esq. Some of the line drawings reproduced are courtesy of the *Railway Gazette* and the Ian Allan Library. The authors wish to emphasise that every care has been taken to credit the correct source of the illustrations, many of which are of some antiquity and the statutory 50 year copyright period may perhaps have lapsed. If we have inadvertently infringed anyone's copyright we apologise; otherwise we can accept no responsibility for error or omission. Finally a word of thanks to Peter Winding, who has specially prepared a number of line drawings, without which the book would be incomplete.

Brian Haresnape FRSA NDD
Dorking, Surrey
August 1981



Below: In the South of England Dugald's classic 'M7' class 0-4-4T for the LSWR, proved to be particularly useful on the SR system, and the type lasted well into BR days. Some examples such as No 30055, seen here, were fitted for push and pull work, on which they performed with alacrity! The 1.08pm (Saturdays only) to East Grinstead was photographed in the branch line bay platform at Three Bridges on 31 March 1962. Only the coming of the diesel-electric multiple-units ousted them. *G. D. King*

Part One: Dugald Drummond in Scotland 1875–1890

Dugald Drummond was born at Ardrossan, Ayrshire, on 1 January 1840 and spent all of his early years in Scotland, serving his apprenticeship with Forrest & Barr of Glasgow, followed by a spell on the Dumbartonshire & Caledonian Railway, on which his father was a permanent way inspector. He then came south to Birkenhead to gain two years' experience of locomotive building with Peto, Brassey & Betts, returning to Scotland in 1864, where he joined the Edinburgh & Glasgow Railway at Cowlairs Works, then under the charge of S. W. Johnson (later of the Midland Railway). It was here that he came into contact with his mentor of the next decade, William Stroudley, who was then the Cowlairs works manager. Stroudley and Drummond next went north to the Highland Railway at Inverness, Stroudley as Locomotive Superintendent and Drummond as Foreman-Erector at Lochgorm Works (becoming the Works Manager two years later). Stroudley departed for Brighton in 1869 and for a very short while Drummond was in full charge, but only until he was able to catch up with Stroudley. His boss became a profound influence that was to last to the end of Drummond's career, with almost slavish copying at times, but never to the extent that he could not produce designs of his own or, if necessary, breakaway from firmly held convictions.

It was in 1875 that Drummond once again returned to his native Scotland, becoming Locomotive Superintendent of the North British Railway. On that railway the locomotive stock was a motley collection of mostly old engines, handling leisurely timed trains, with only a few between Edinburgh and Glasgow being remotely worthy of the distinction of 'express'. These were worked by a handful of Beyer, Peacock Singles. Two Stroudley features were applied immediately, the naming of engines, including those already in service, using the names of places served by the NBR and the Brighton livery of yellow with claret red lining.

Dugald Drummond laid the foundations of his locomotive design strategy at Cowlairs. Somewhat justifiably the first classes were very close in design to Stroudley's engines, but the nature of the railway soon made it necessary to adopt other standards, in particular a leading bogie, which Stroudley abhored. However Drummond remained faithful to many Brighton practices, particularly the layout of cylinder ports and coned pistons and cylinder covers, but an early hallmark of Drummond locomotives not taken from Brighton was the marine type big ends of the connecting rods. Stroudley had indulged in feed water heating (simply surface condensing in the tender, the exhaust steam passing through a 4in pipe and a flexible connection to discharge below a small dome in the centre of the coal space, or the side tanks) which made it necessary to use pumps to induce the water into the boiler, a practice continued by Drummond on the North British until 1879. With a simplification of design the Scottish engines of Drummond became a byword in simplicity, ruggedness and reliability. A total of 211 engines were built to his designs for the NBR.

In August 1882 Drummond moved to St Rollox and there he found that the Caledonian locomotive stock was even worse than that of the NBR in 1875! To meet immediate needs new boilers were fitted to several of the older engines but it was not until the end of 1883 that the first of his classes took to the road. From then until 1890 203 engines to his designs were built and afterwards his successors continued their construction either as additions to the existing classes, or as only slight variations, so that they rank as Drummond types and making a total of 378. His immediate successor, Hugh Smellie had less than a year in office, his contribution being confined virtually to changes in boiler proportions, and the next chief, John Lambie continued the construction of four classes, producing only three of his own, two for the new 'Low Level' lines then being built through the centre of Glasgow. These were the 4-4-0T '1' class (1893-4) and 0-4-4T '19' class (1895), the third being a variation of the 0-6-0ST of 1887, all closely copying Drummond principles. John McIntosh, who followed Lambie in 1895, will be remembered for his policy of fitting larger boilers to existing Drummond frames, achieving fame with the 'Dunalastair' 4-4-0 classes, and it was not until 1901 that substantially larger engines were built by the CR.

Drummond was fully aware of developments elsewhere and looked hard at compounding, but almost alone of the late Victorian and Edwardian engineers rejected the arguments in its favour. He never built a compound, nor converted any engine, determining by reason and proving by demonstration that far more economical working was to

Table 1A

NBR Locomotives

CLASS NBR/LNER		*165/J82*		*100/J32*		*474*	*476/D27, D28*
Condition		*As built*	*New boiler*	*As built*	*New boiler*	*As built*	*As built*
Cylinders	**in×in**	15×22	15×22	18×26	18×26	17×24	18×26
Bogie wheels	**ft-in**	—	—	—	—	4-6	3-6
Driving wheels	**ft-in**	4-6	4-6	5-0	5-0	7-0	6-6
Trailing wheels	**ft-in**	—	—	—	—	4-6	—
Heating surface:							
Tubes	**sq ft**	636	586	1,005	1,130	957	1,005
Firebox	**sq ft**	65	80	94	105	86	94
Total evaporative	**sq ft**	701	666	1,099	1,235	1,043	1,099
Grate area	**sq ft**	14	13¾	21	17	16¼	21
Boiler pressure	**lb/sq in**	140	140	150	150	150	150
Tractive effort	**lb**	10,908	10,908	17,901	17,901	10,528	13,770
Coal (Tank locomotive)	**t**	1½	1½	—	—	—	—
Water (Tank locomotive)	**gal**	600	600	—	—	—	—
Weight (Engine only)	**t-c**	33-9	36-0	38-15	39-10	38-8	44-5

Table 1B

CR Locomotives

CLASS CR/LMSR		*294, 711/2F*		*66, 13/2P*			*171/2P*
Condition		*As built*	*LMSR*	*As built*	*Rebuilt*	*Dun 1 boiler*	*As built*
Cylinders	**in×in**	18×26	18×26	18×26	18×26	18×26	16×22
Bogie wheels	**ft-in**	—	—	3-6	3-6	3-6	—
Driving wheels	**ft-in**	5-0	5-0	6-6	6-6	6-6	5-0
Trailing wheels	**ft-in**	—	—	—	—	—	2-6
Heating surface:							
Tubes	**sq ft**	1,096	1,076	1,096	1,076	1,285	573
Firebox	**sq ft**	113	112	113	112	119	65
Total evaporative	**sq ft**	1,209	1,188	1,209	1,188	1,404	638
Grate area	**sq ft**	19½	19½	19½	19½	20½	14
Boiler pressure	**lb/sq in**	150	150	150	160	160	150
Tractive effort	**lb**	17,901	17,901	13,770‡	14,688	14,688	11,960
Coal (Tank locomotive)	**t**	—	—	—	—	—	1¾
Water (Tank locomotive)	**gal**	—	—	—	—	—	830
Weight (Engine only)	**t-c**	41-6**	41-6**	45-3	45-3	46-1	37-15

*Later 160lb/sq in (TE 12,790lbs)
†Class 211 coal 2t, water 950gal, wt 46-5
‡Class 13 TE 14,690
**Wt (with condensing gear) 42-4

Table 1C

NBR Tenders

Coal	**t**	4	4	6
Water	**gal**	2,400	2,500	2,500
Weight	**t-c**	30-10	32-0	32-0
Classes using each type		474	100 (J32) 34 (J34)	476 (D27 & D28)

All these tenders were 6-wheeled

	157/G8		494/D50		34/J34		72/D51	
Rebuilt	As built 0-4-2T	Rebuilt 0-4-4T	As built	Rebuilt	As built 17×24	As built 17×26	As built	As built
18¼×26	17×24	17×24	17×26	17×26	17×24	17×24	16×22	16×22
3-6	—	—	3-6	3-6	—	—	2-10	2-10
6-6	5-9	5-9	6-0	6-0	5-0	5-0	5-10	5-10
—	3-6	3-6	—	—	—	—	—	—
1,224	984	950	1,075	950	959	959	585	586
126	91	101	99	101	102	102	62	80
1,350	1,075	1,051	1,174	1,051	1,061	1,061	647	666
20	16	16½	16½	16½	16½	16½	14½	13¾
175	140	150	140	150	150	150	140	140
16,514	11,963	12,817	12,418	13,305	14,738	15,967	11,170	11,170
—	1½	2¼	1½	2½	—	—	1¾	1¾
—	980	1,290	950	950	—	—	655	655
46-12*	45-0	47-17	47-4	47-4	37-13	37-13	35-4	35-4

* D28 wt 47-18

	262/0P	264/0F	123/1P	385/211/3F		80/1P		272/0F
Rebuilt	As built	As built	As built	As built	Rebuilt	As built	Rebuilt	As built
16×22	14×20	14×20	18×26	18×26	18×26	18×26	18×26	14×20
—	—	—	3-6	—	—	3-6	3-6	—
5-0	3-8	3-8	7-0	4-6	4-6	5-9	5-9	3-8
2-6	2-6	—	4-6	—	—	—	—	—
607	632	632	950	838	975	838	1,047	632
65	52	52	103	101	111	99	111	52
672	684	684	1,053	939	1,086	937	1,158	684
14	10¼	10¼	17¼	17	17	16¾	17	10¼
150	140	140	150*	150	150	150	170	140
11,960	10,601	10,601	12,790	19,890	19,890	15,566	17,641	10,601
1¾	2¼	1¼	—	2¼†	2¼†	—	—	2
830	800	800	—	1,000†	1,000†	—	—	900
37-15	31-4	27-1	41-7	43-16†	43-16†	42-7	43-10	31-1

Table 1D

CR Tenders

Coal	**t**	4½	4½	4½	4	4½	4½	4½
Water	**gal**	2,500	2,800	2,850	2,840*	3,100	3,130	3,560
Weight	**t-c**	31-19‡	33-19†	33-19	34-17	35-8	35-8	40-0
Classes using each type		294, 66, 80	294, 66	123 (when new)	66, 80	123	66, 80	66, 13

*Post Drummond type used on Drummond classes
†LMSR wt shown as 34-17
‡Post Drummond version wt 34-0

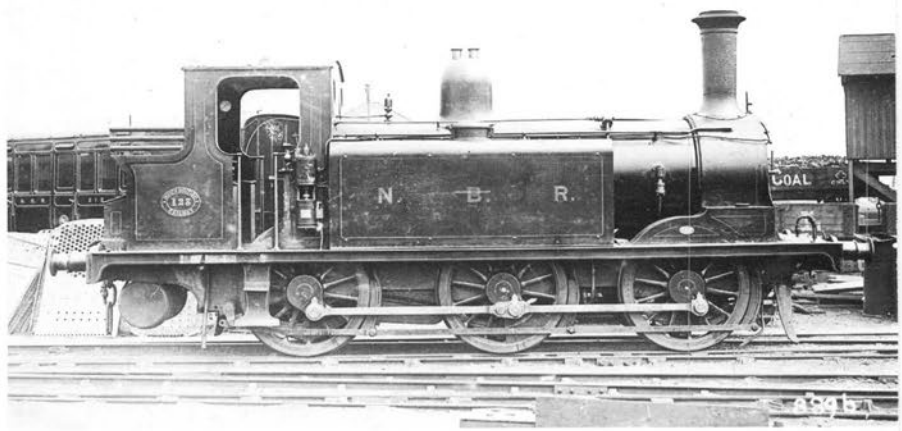
All these tenders were 6-wheeled

be achieved by using higher boiler pressures and encouraging drivers to work expansively. However he did not get his way with the Scots, who could stand up to his exhortations and then carry on doing the job exactly as before. Despite this there is no doubt that Drummond laid the foundations of the company's locomotive designs and established standards of performance that kept the Caledonian in the forefront of British practice for some 20 years.

On both the North British and the Caledonian the workshops, at the time of Drummond's arrival, were hopelessly inadequate and virtually incapable of maintaining the locomotive fleet. He carried out extensive reorganisations at both Cowlairs and St Rollox, particularly at the latter which was enlarged by 1885 and then employed over 2,000 men.

Having moved from one railway to another in his career (as was the custom) Drummond broke new ground in 1890 when he left the CR to join a consortium known as the Australian Locomotive Engine Works Ltd which in February 1890 offered to supply 100 engines within a couple of years in response to an advert placed by the New South Wales Government Railways which promised an order of 75 per annum for five years to any new builder. So Drummond finished at St Rollox and set sail for Australia. Sadly, success eluded him, although he left a legacy that stands to this day, the company now being known as the Clyde Engineering Pty. In 1891 he returned to Scotland to found the Glasgow Railway Engineering Co Ltd, with the hope that his new firm would gain orders from the railway companies. Again success was not to come his way and only a few engines being built, notably seven diminutive narrow gauge engines for Glasgow Corporation's Dawsholm gas works in 1894, and some railcars for New South Wales and the Alexandra (Newport & South Wales) Docks & Railway. A few other engines seem to have been supplied (possibly built elsewhere) and the business continued to exist for many years after Drummond once again left Scotland, this time to join the London & South Western Railway, in 1895.

A brief note is needed about locomotive renumbering. On both the NBR and CR many Drummond engines were renumbered into their respective owner's duplicate number list. On the NBR this was done by renumbering into a series that had started at 1001 some years before and by the time that Drummond engines were first so treated had reached 1289; in the LNER renumbering scheme of February 1924 the NBR duplicate list engines were to have filled various gaps in the former NBR capital list and the few Drummond engines actually re-numbered in accordance with those instructions are noted. However, before long it was decided to add 9000 to the NBR number, such that No 1387 became No 10387, etc. On the CR the transfer to the duplicate list was done simply by adding 1000 to the capital list number (with two special exceptions mentioned) but the LMSR had a complete renumbering scheme, details being given for each class. No Drummond engines survived on the LNER to become British Railways property but those on the LMSR that did survive were further renumbered in most instances by the addition of 40000 to the LMSR number.



Right: Clearly derived from Stroudley's LBSCR practice, the first locomotive design by Dugald Drummond was the '165' class 0-6-0T for local and branch line work. No 123, built at Cowlairs in 1877, is illustrated. *LPC*

Locomotives for the North British Railway

SECTION 1

0-6-0T NBR Class 165 (1916 power class R); LNER 'J82'
Light Tank Engines
Introduced: 1875
Total: 25

Dugald Drummond's first design was a light tank engine for local and branch line work, based on the LBSCR 'A' class, the famous 'Terriers', with the motion, cylinders, boiler and other fittings closely copied from Stroudley's practice, complete with feedwater heating by means of surface condensing and crosshead pumps on the first six engines. There was some hesitation about standardising a particular type of safety valve at first for No 166 had a patent lock-up type, No 259 had another patent pattern with two separate columns (possibly a Drummond patent) and Nos 158 and 297 had Adams valves, but the Ramsbottom type became the standard. Although a little larger than the 'Terriers' they were still small engines, the platforms being low enough to make it necessary to raise the buffer beams above them at each end. The cab was Drummond's version of the Stroudley type and the bunker was narrower than the side tanks. The 25 engines were built in 1875-8 and then rebuilt in 1908-10 with new boilers. Another change was the increased coal capacity, achieved by adding coal rails to the bunker.

Originally only hand brakes were fitted but in 1881 a start was made on fitting steam brakes. When continuous brakes became compulsory the automatic air brake was fitted for both the engine and train, although some retained the steam brake for the engine at first. Later Nos 108/23/66 were dual braked to handle vacuum braked stock from other railways.

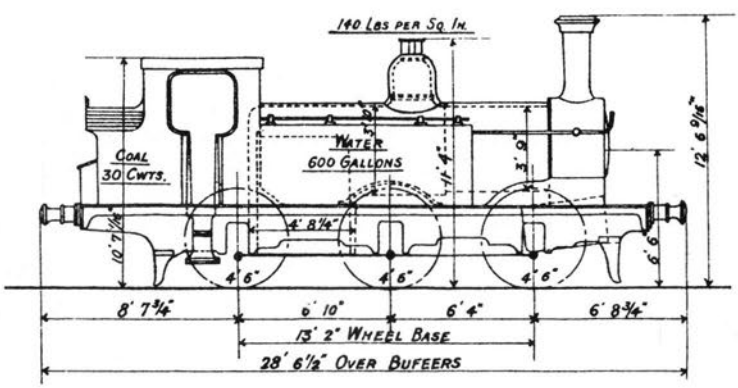
From the beginning the class was used on local workings in both Edinburgh and Glasgow, as well as many of the branches, their names giving a good idea of their distribution. The Glasgow engines were soon displaced by later Dummond classes and many were then used for shunting, although some were still on passenger work in late NBR days. Only two ran with LNER numbers, Nos 10330/58, but another ran as LNER No 1336B in black livery. The engines were built as follows (the 1916-20 NBR duplicate list numbers are shown on the right).

Nos 165/6, 259/84	Cowlairs	1875	1289-91/4
Nos 241/97	Cowlairs	1876	1299, 1304
Nos 123/51/8/61/2, 274/95, 20	Cowlairs	1877	1328/30*/31-3/5/6/48
Nos 22/9, 49, 96/7, 106-8, 240, 313, 485	Cowlairs	1878	1349-57/8*/9

*Became LNER Nos 10009 and 10023 respectively and then Nos 10330/58

First of class withdrawn: 1290 (166) (11/1922)
Last of class withdrawn: 1328 (123) (11/1926)
None preserved

Below: Outline drawing of '165' class 0-6-0T, introduced 1875.



SECTION 2

0-6-0 NBR Class 100 (1916 power class C); LNER 'J32' Heavy Goods Engines

Introduced: 1876
Total: 32

A top priority on Drummond's arrival on the NBR was a larger goods engine. To provide this he copied the LBSCR 'C' class 'Jumbos' in several respects, including feed water heating in the tender (this was a copy of Stroudley's older type) and crosshead feed pumps, but the engines were actually a little more powerful. The first Neilson order was for six, the second for 20, but the need for some passenger engines was so great that the last six were cancelled in favour of two Singles and four bogies (see Sections 3 and 4) and eventually the 32 engines were built (in 1876-7), at both Cowlairs and by Neilsons of Glasgow.

One day in 1882 just after Drummond had left the NBR, No 465 blew up at Dunbar; investigation failed to reveal the cause, due to the extensive damage, but Matthew Holmes, Drummond's successor, clearly suspected the Ramsbottom safety valves and immediately set about replacing them with lock-up valves on NBR engines. The damaged engine was rebuilt in its original form.

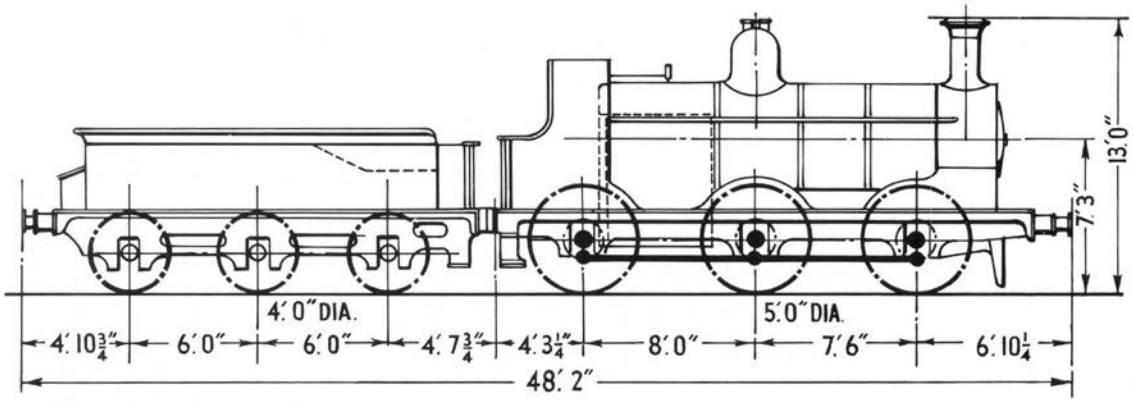
No 153 was subjected to an experimental rebuilding in 1890 with the Morton valve gear, a version of Joy's, but in 1901 it reverted to the usual Stephenson link motion, losing its 19in cylinders which had been fitted at the same time. General rebuilding of the class took place in 1898-1903, the larger firebox of the new boilers making it necessary to lengthen the wheelbase by 3in. Another alteration was the change to a Holmes pattern cab in place of the Drummond type. Originally a steam brake was fitted, the brake valve being on the *right* of the boiler faceplate, a relic of earlier days when the fireman worked the brake. Some were fitted later with the automatic air brake and Nos 278, 461/73 were dual braked.

For many years these engines were stationed at most of the principal depots for main line goods work, but in their final years were concentrated in the Central Lowlands for mineral and local goods traffic. None were repainted in LNER livery or ran with LNER numbers, although 19 survived the Grouping. The engines were built as follows, being placed on the duplicate list in 1917-8 (with the second set of numbers shown on the right).

Nos 100/53, 242/70/8/81/7/92	Cowlairs	1876	1297/8, 1300-5
No 304	Cowlairs	1877	1307
Nos 454-65	Neilson	1876	1308-19
Nos 139, 305/15	Cowlairs	1877	1329/37/9
Nos 466-73	Neilson	1877	1340-7

First of class withdrawn: 1303 (281) (4/1921)
Last of class withdrawn: 1337 (305) (4/1925)
None preserved

Below: Outline drawing of the '100' class 0-6-0 heavy goods engine, introduced 1876, in later condition with Holmes cab.



SECTION 3

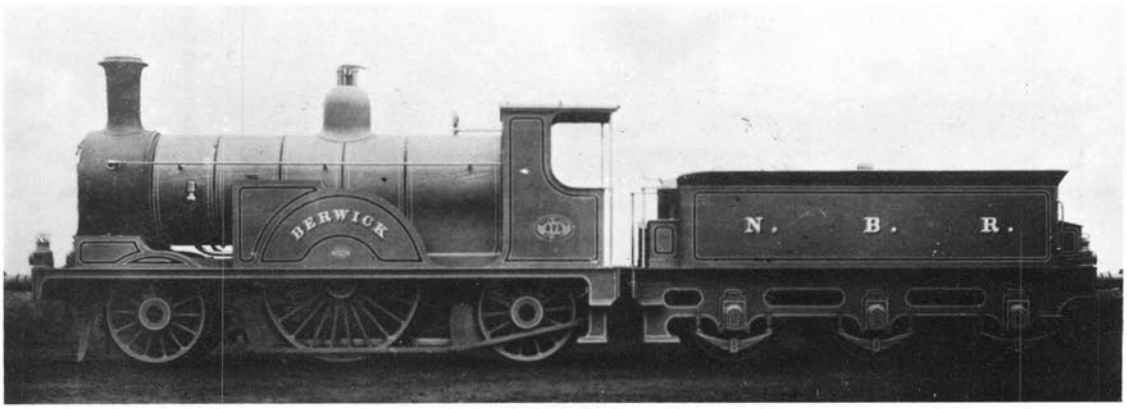
2-2-2 NBR Class 474
Express Passenger Engines
Introduced: 1876
Total: 2

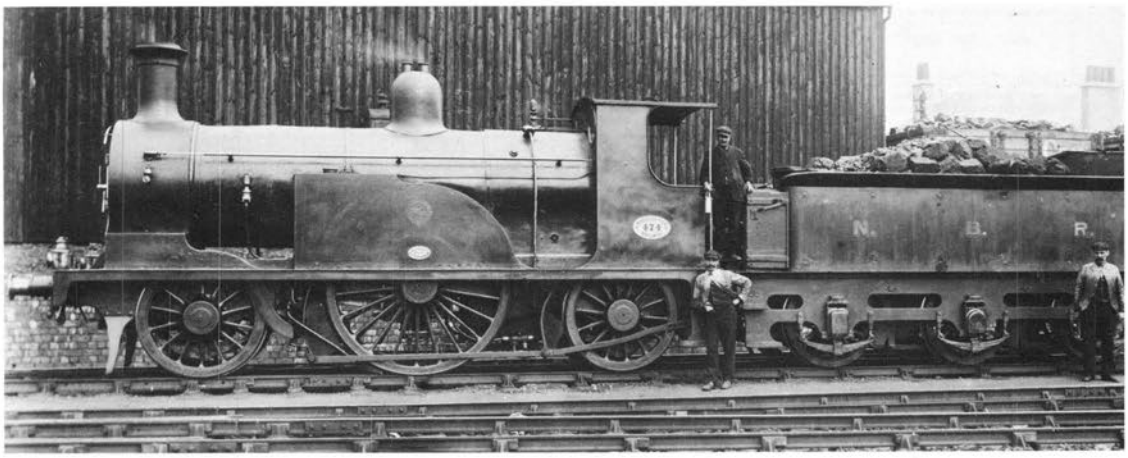
In 1875 the NBR had but eight Singles, Nos 211-8 built by Beyer, Peacock in 1856-61, that could rank as express engines, having been built for the Edinburgh & Glasgow Railway. In April 1876 the order on Neilson for goods engines was amended so that two more Singles could be supplied later that year, becoming Nos 474 and 475. Neither was rebuilt and nor were they ever transferred to the duplicate list. The design very closely resembled the LBSCR Single of 1874, No 326 *Grosvenor* ('B2' class), differing in appearance only in the shape of the cab roof and in the use of Ramsbottom safety valves. There was also the usual Stroudley feed water heating equipment, later discarded. Steam brakes were fitted initially but later the automatic air brake replaced them. Interesting features were the centrally supported slide bars, not being attached to the cylinders, and the vertical reversing screw on the footplate. For the greater part of their life both were employed on Edinburgh and Glasgow expresses, especially those that made connections with East Coast trains.

Both were withdrawn in July 1910
None preserved

Below: Yet another example of the strong Stroudley/Brighton influence upon Dugald Drummond's early designs. Class 474 No 475 *Berwick*. *LPC*

Bottom: The only other representative of the class — No 474, both were built in 1876. *LPC*





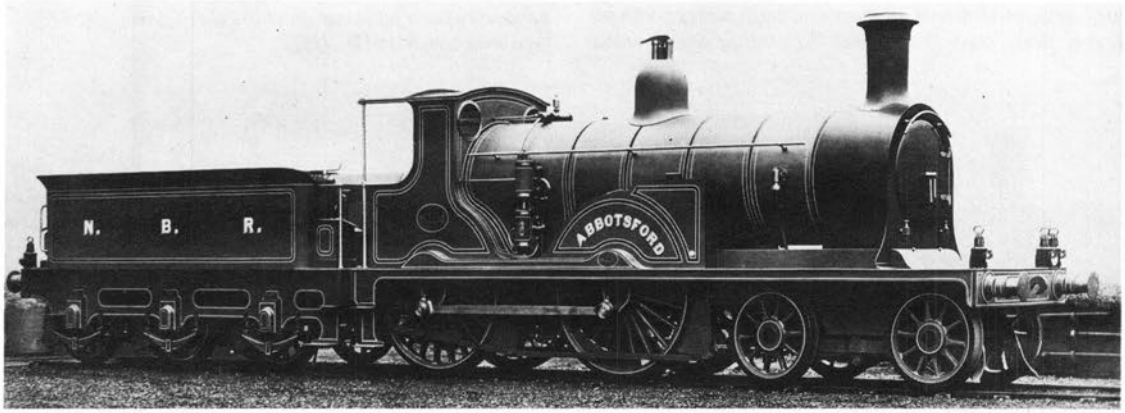
SECTION 4

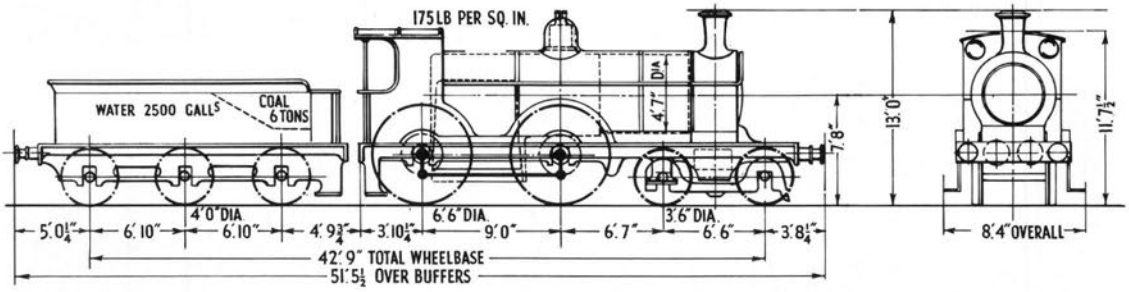
4-4-0 NBR Class 476 (1916 power class M); LNER 'D27' and 'D28' Express Passenger Engines

Introduced: 1876
Total: 12

Through trains between Edinburgh and St Pancras began in May 1876 and at first the NBR used existing 4-4-0 engines of Wheatley's '420' class, dating from 1873, but they proved to be unequal to the task of hauling the heavy coaches of the MR and NBR joint stock, although sufficient for the purely local duties. Accordingly the second order for goods engines placed with Neilsons was altered yet again in June 1876 so that four express engines could be obtained. Even so it was not until May 1877 that the first of the new class was available. Although completed in 1876 the batch was found to be defective in several respects, particularly the cylinders, brakes and bogies with the result that they could not be used until these faults were rectified.

By contemporary standards the '476' class engines were large and in fact they were not exceeded significantly in size or power for nearly 20 years. Drummond had now begun to break away from Stroudley, in particular by adopting a leading bogie, and the class became the prototype for many British 4-4-0 types. In appearance they were neat, robust and purposeful, with a new shape of cab which was a great improvement over the rather scanty shelter provided beforehand. Not surprisingly they had feedwater heating and pumps. The eight engines of 1876-8 had steam





Top: The true Drummond style begins to show through in his '476' class 4-4-0 express passenger design; in particular by the use of a leading bogie, a feature disliked by Stroudley. These large 4-4-0s also introduced the shapely Drummond cab design. Note the wooden brake blocks on the driving wheels. *LPC*

Above: Outline drawing of the Class 476 4-4-0.

Right: The six engines rebuilt in 1904 (the survivors becoming LNER Class D28) had the more spacious cab design favoured by Reid, complete with side window. These engines lost their smokebox wingplates in the process, and the tender seen here has conventional springing, above the axles. LNER No 10387 was photographed, in apple green livery, at Inverkeithing. *T. G. Hepburn/Rail Archive Stephenson*

brakes for the engine and tender and automatic air for the train, curiously independent of each other so that there was no coordinated application; the other four had air braking for both engine and train and by about 1890 the first two batches had been altered to conform. They had Drummond's standard tender with underslung springs and a toolbox at the rear but later some had replacement tenders of Holmes design.

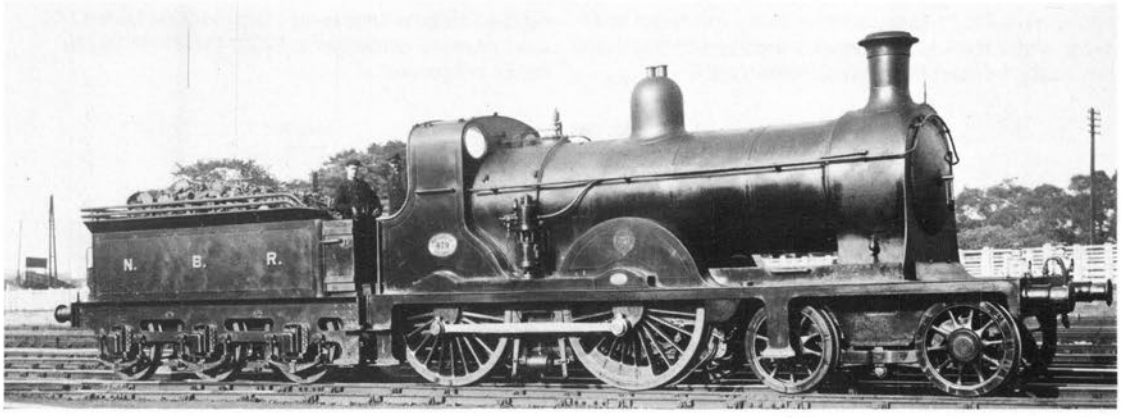
Rebuilding took two forms; in 1902 six, Nos 476/8/9/88-90 were fitted with new boilers and the Holmes design of rounded cab, the survivors becoming LNER Class D27. The other six, rebuilt in 1904, had Reid's more roomy cab, the survivors becoming Class D28.

Apart from Nos 486/7 all were set to work on the Waverley route and had associated names; the other pair ran between Burntisland and Aberdeen, using the ill-fated Tay Bridge, but after its collapse in 1879 they joined the rest, being suitably renamed. Once displaced from the expresses on the Waverley route they remained on locals for several years, but further displacement sent some to the West Highland line, on which they performed remarkably well until replaced by newer engines, after which they were confined to stopping trains from Edinburgh. Only two ran with LNER numbers, Nos 10361/87.

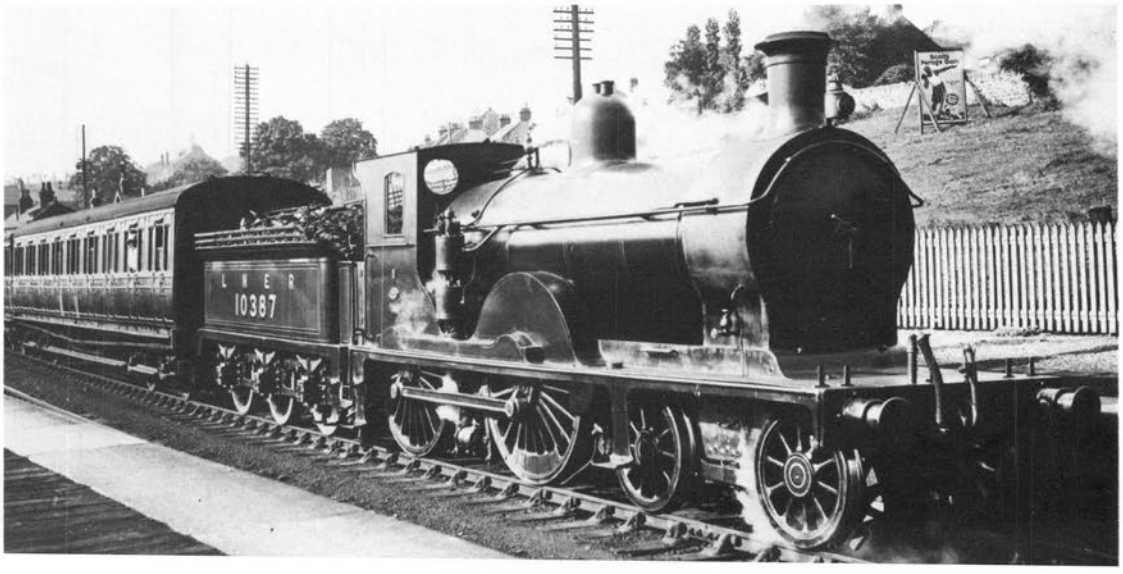
The engines were built as follows (1919-20 duplicate numbers on the right):

Nos 476-9	Neilson	1876	1321-4
Nos 486-9	Neilson	1878	1360-3
Nos 490-3	Cowlairs	1879	1371/87-9

First of class withdrawn: 1389 (493) (6/1921)
Last of class withdrawn: 10387 (491) (9/1926)



Above: It is difficult to understand why the Holme's rebuilds of the '476' class (later LNER Class D27) reverted to the primitive cab shown here, which admittedly gave slightly more side shelter but reduced the overhead cover considerably. This rebuilding, of six locos in 1902, featured a new boiler, and the sandboxes for the leading coupled wheels were located below the running plate. Illustrated is No 479. *LPC*



SECTION 5

0-4-2T (later 0-4-4T) NBR Class 157 (1916 power class P): LNER 'G8' Passenger Tank Engines

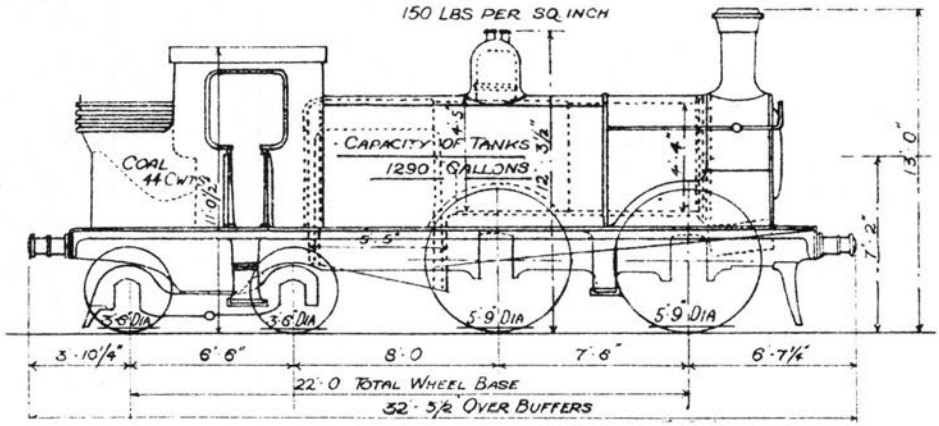
Introduced: 1877
Total: 6

For the highly competitive Clydeside services to Helensburgh and Balloch, for which the NBR vied against the Caledonian (perhaps the most bitterly contested suburban traffic ever in the British Isles) Drummond produced an enlargement of the LBSCR 'D' class in 1877. From the beginning they proved somewhat troublesome, due to the weight on the trailing axle and within some five years bogies were substituted. This produced the prototype of another widespread design, destined to serve the CR and LSWR as well; in fact construction continued until 1925 when the LMSR added a final ten to the fleet they had inherited from the Caledonian.

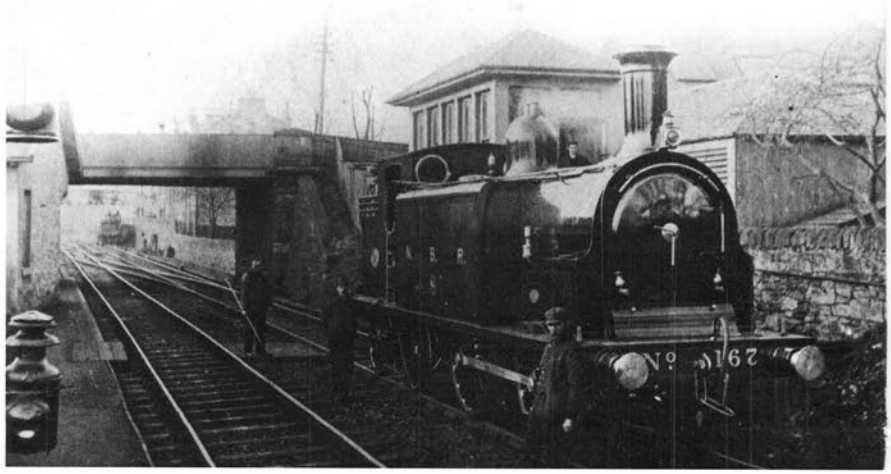
All were built with steam brakes, but eventually they had air brakes for the engine and train. Latterly No 1320 was dual braked. An early alteration was the removal of the Stroudley type condensing gear and feed pump. All were rebuilt in 1905, the new boiler being common with the succeeding class of 4-4-0T (Section 6).

Their stay on the Clyde coast trains was very short and they were soon transferred to the Fife and Northern districts, working main line trains. No 314 worked the special train for the opening of the first Tay Bridge in 1878. After relegation to local work they went back to the Glasgow area, but finally they were shared between Dundee, Stirling and St Margarets (Edinburgh). None ran in LNER livery or numbers. All six, Nos 157, 480, 88/9, 167, 314 were built at Cowlairs in 1877, becoming Nos 1320/5-7/34/8.

First of class withdrawn: 1325 (480) (10/1924)
Last of class withdrawn: 1320 (157) (9/1925)
None preserved



Above: Revised design of NBR Class 157, with bogie substituted for the original trailing axle. In this form the design became the precursor of the numerous 0-4-4Ts built by the Drummond brothers.



Right: Class 157 0-4-4T No 167 was named *Cardross* and *Dundee* during its existence.
A. B. MacLeod collection

4-4-0T NBR Class 494 (1916 power class P); LNER 'D50' Passenger Tank Engines

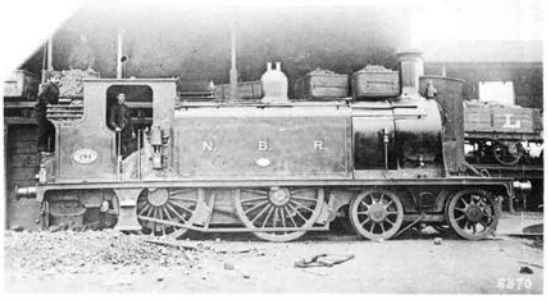
Introduced: 1879
Total: 3

For the fastest trains to Helensburgh Drummond built three large 4-4-0T engines in 1879; almost all of the Stroudley ideas were abandoned and the result was a straightforward and robust locomotive. The boiler was of the type introduced with the two Singles in 1876. From the start they had air brakes for the engine and train, No 1390 being dual braked just before the Grouping. The large coupled wheels (for a tank) were exceeded in diameter only by some tank engines on the London, Tilbury & Southend Railway. An unusual feature for many years was an electric system of communication between the driver, guard and passengers, using batteries and bells.

All three were rebuilt in 1905 but were not much altered in appearance throughout their working lives, apart from the enlargement of the bunker. After rather more than thirty years on the Helensburgh trains they were dispersed, one working at Fort William, but they finished up at Stirling, Polmont and Bathgate before condemnation. Nos 1390/1 initially became LNER Nos 9231/2 in 1924 but very quickly they were altered to Nos 10390/1.

All three, Nos 494-6, were built at Cowlairs in 1879, becoming Nos 1390-2 in 1919.

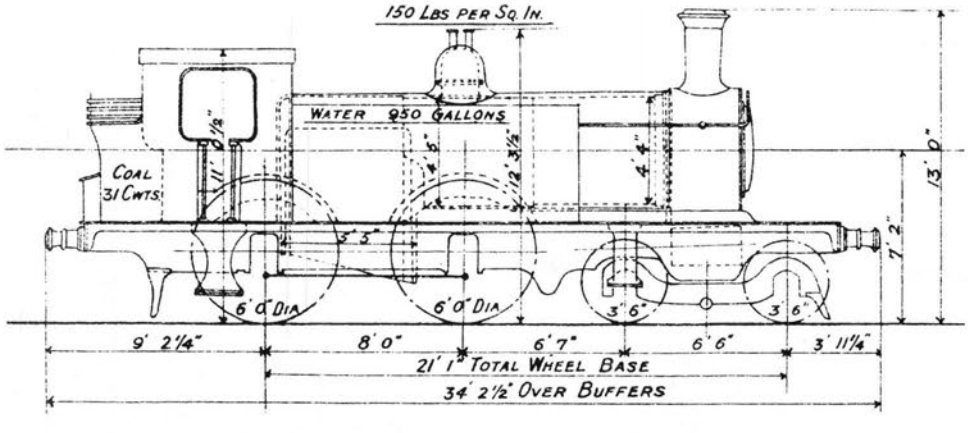
First of class withdrawn: 1392 (496) (5/1924)
Last of class withdrawn: 10390 (494) (3/1926)
None preserved



Top: Dugald Drummond's elegant 4-4-0T solution to the need for some fast passenger tank engines, the '494' class of 1879. Only three engines were built, at Cowlairs. Note the location of the works plate on the tank side below the initial B of NBR. First of the class, No 494 is illustrated. *LPC*

Above: As LNER Class D50, No 10390 is seen carrying a 'Balloch' destination board on the smokebox top. Apart from the black livery, the appearance had changed but little over the years; even the wingplates were retained. Originally NBR No 494. *Ian Allan Library*

Below: Outline drawing of the '494' class 4-4-0T, introduced in 1879.



SECTION 7

0-6-0 NBR Class 34 (1916 power class D): LNER 'J34'
Goods Engines
Introduced: 1879
Total: 101

For more general goods traffic throughout the NBR Drummond produced a rather lighter engine than his '100' class of 1876 and they became one of the most numerous of his designs. Here again, the design was to become the prototype for 0-6-0 goods engines on the CR, LSWR and HR. At first a stroke of 24in was used, but soon 26in became the standard. Five built by Dubs in 1879 had a wheelbase 6in shorter than the rest. No 524 was rebuilt in 1892, after a collision with No 501 on Todd's Mill viaduct on the Bo'ness branch, from which it fell into the valley below! The reconstruction included the fitting of a Holmes type cab. All the others were rebuilt in 1898-1908, retaining the Drummond cab. Steam brakes were standard until 26 engines were fitted with air brakes, with three, Nos 501/7/44 being dual braked. A few were provided with steam heating apparatus.

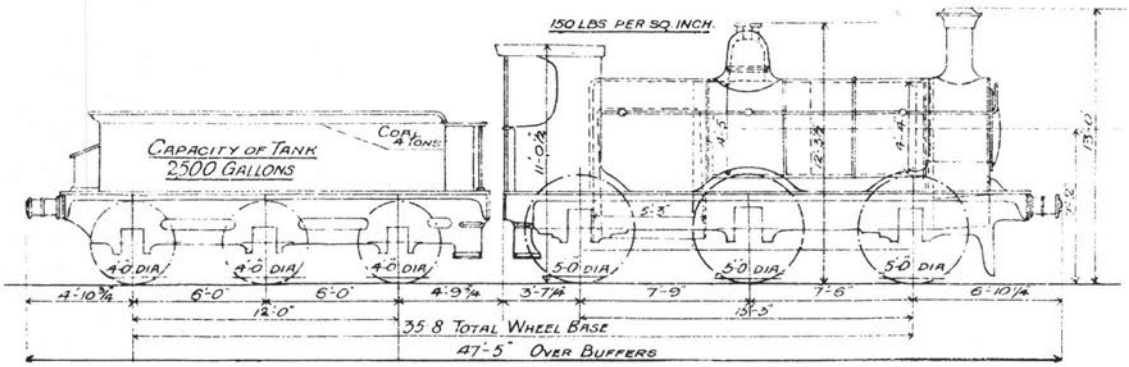
Known as the 'Wee Drummonds' the class was to be seen all over the NBR and proved to be a popular 'maid of all work'. One duty worthy of note was a Glasgow to Newcastle working, via the Border Counties line, a journey of 175 miles. By the Grouping they were normally handling local goods and pit to yard coal trains in Glasgow, the Central Lowlands and Fife, just a few being elsewhere. Only eight were scrapped before 1923 and of the remainder just eight ran with LNER numbers, Nos 9138/63, 9534/6/50/2, 10370, 10409, but No 27 had run as No 27B. The engines were built (many being transferred to the duplicate list in 1919-23) as follows:

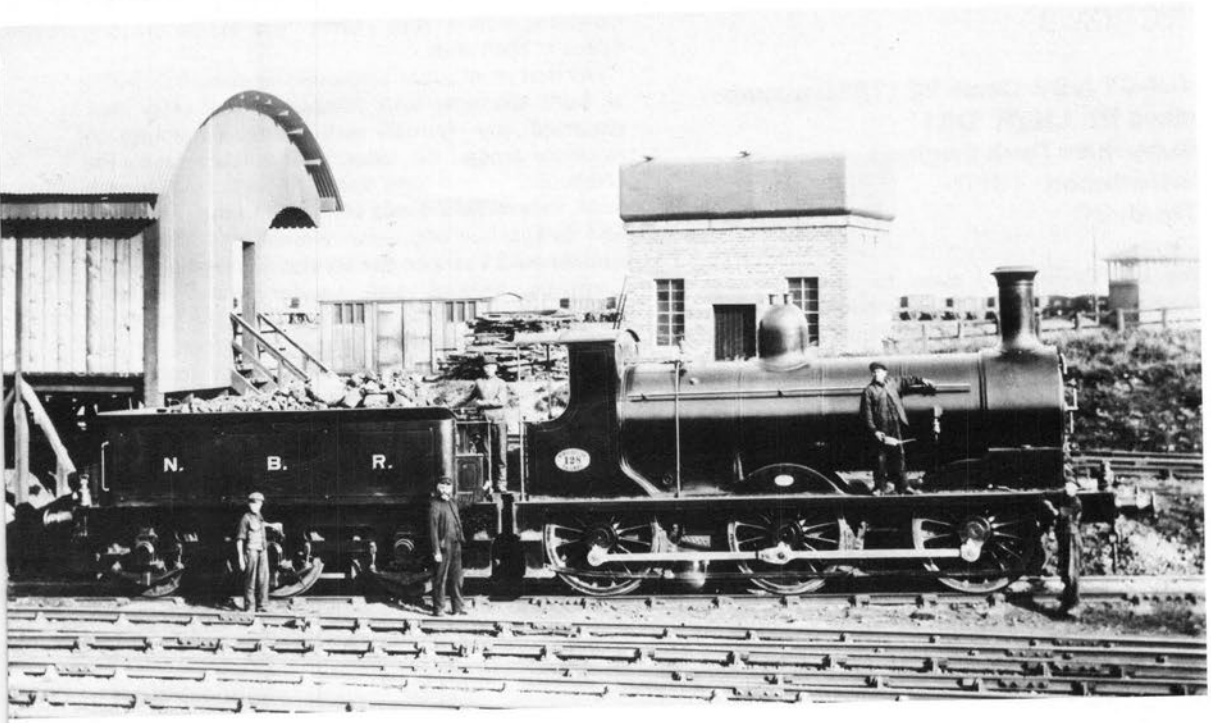
Nos 87, 271/7/9/88-90, 34/5, 296, 300-3/6, 401-3	1879	Cowlairs	1364-70/6-86*
Nos 497-501	1879	Dubs	1393-7
Nos 46, 84, 171/5, 272/3, 506-17	1880	Cowlairs	1400/3/7-10/2-23*
Nos 128/43, 518-28	1881	Cowlairs	1430-2/72-81*
Nos 529-33	1881	Cowlairs	
Nos 534-45, 27/8, 30, 125/63/84, 548-53	1882	Cowlairs	
Nos 554-65, 18, 138, 286, 311, 481/2	1883	Cowlairs	

*Nos 519-26/8 transferred to the duplicate list by the LNER in 1923 (No 527 allotted No 1480 but not renumbered).
*Nos 1370 and 1409 became LNER Nos 9345 and 9538 in 1924 but were soon altered to Nos 10370 and 10409.

First of class withdrawn: 1379 (300) (4/1921)
Last of class withdrawn: 9138, 9550 (1/1928)
None preserved

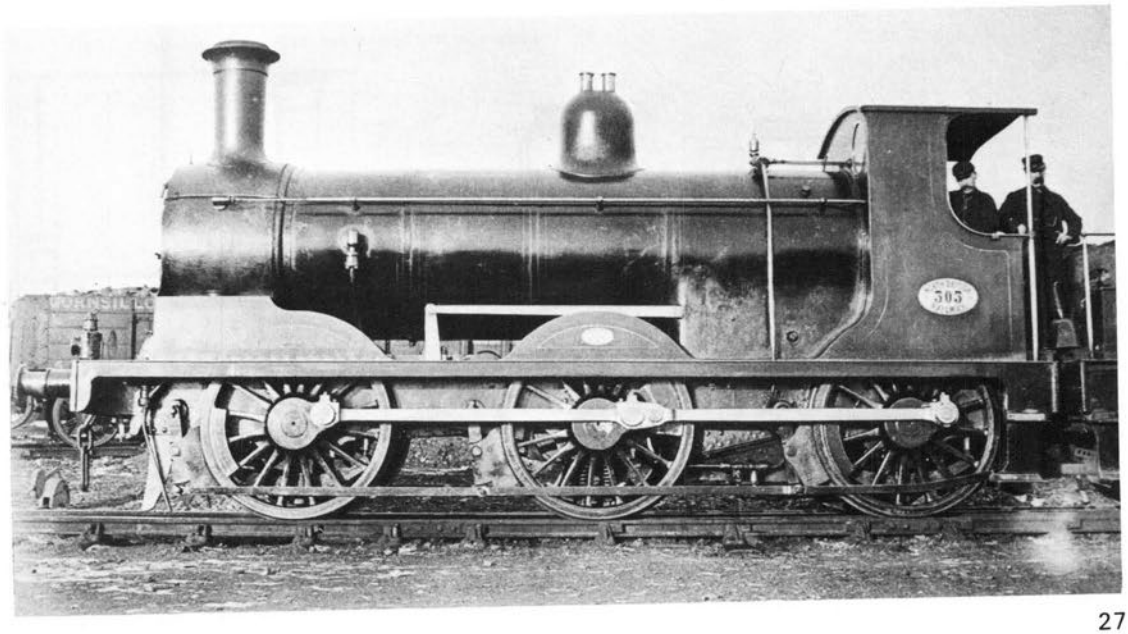
Below: Outline drawing of the Class 34 0-6-0 goods engine design, introduced 1879.





Above: Class 34 0-6-0 goods engine No 128, delivered from Cowlairs in 1881, photographed at Burnbank *circa* 1904.
LGRP, courtesy David & Charles

Below: This broadside view of No 303, one of the initial batch of engines built at Cowlairs in 1879, emphasises the clean finish and simple but robust construction that Drummond copied from Stroudley; adding of course his own distinctive touches.
LGRP, courtesy David & Charles



SECTION 8

4-4-0T NBR Class 72 (1916 power class R): LNER 'D51' Suburban Tank Engines

Introduced: 1880
Total: 30

The last Drummond class for the NBR was an extremely neat and somewhat diminutive suburban and branch line type, 24 being built in Drummond's time and six added by Holmes. Although rebuilt in 1908-11 they were changed little, apart from the enlarged coal bunker. Originally built with steam brakes for the engine, they had a separate air brake for the train, quite unconnected with the latter and worked by separate handles on opposite sides of the cab. Later they were converted to conventional air braking and five, Nos 19, 67, 105/11, 268 were dual braked. A few had condensing apparatus for some years and those that worked to Glasgow Queen Street had, until 1908, a guide for the Cowlairs incline rope. Most had steam heating hoses at both ends.

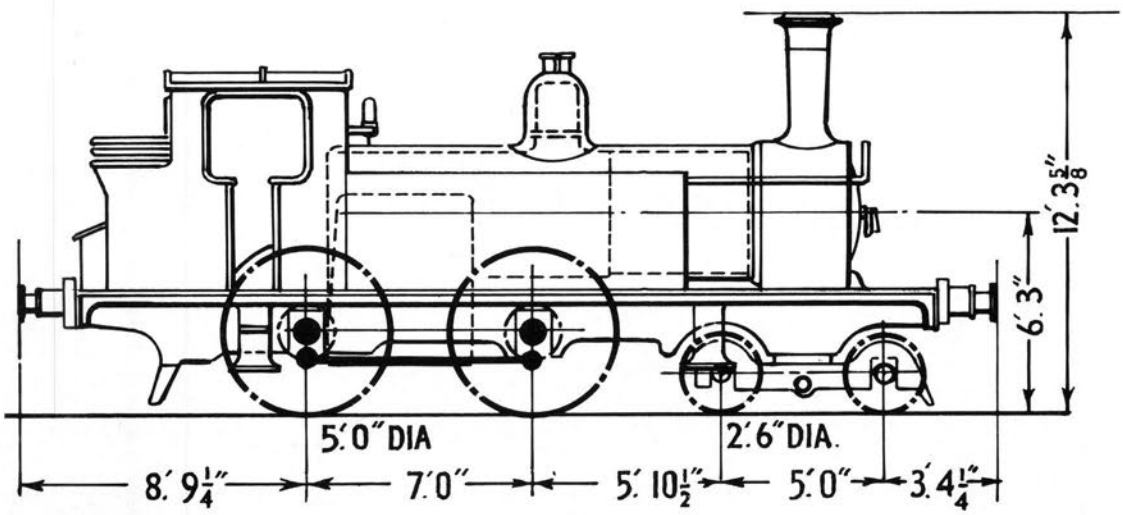
At first most were employed on suburban trains in both Glasgow and Edinburgh and after they departed the former they remained much in evidence around the latter, until withdrawal by the LNER. Some had long spells on individual branch lines; indeed No 79 was sent new to the Galashiels and Selkirk line and never worked anywhere else, spending 43 years on the service. On the lightly laid Carmyllie, Gifford and Lauder branches they worked all the traffic. After the Grouping the class were concentrated at St Margarets as their number diminished, but four were sent away from NBR lines to work the former Great North of Scotland unfenced branch between Fraserburgh and St Coombs, having cowcatchers fitted at each end. These were Nos 10456/8/61/2, sent there between 1926 and 1932, the last of the class being withdrawn from the branch. Nos 10406/11/25-9/56/8/9/61/2/4/5/7/9 ran in LNER livery.

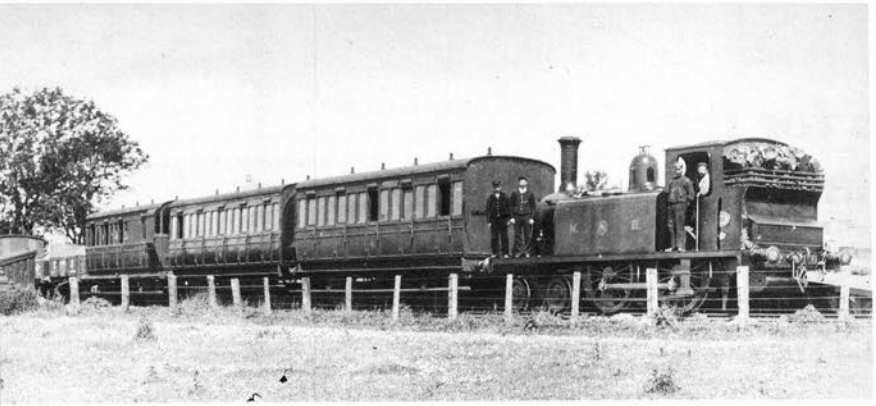
The engines were built as follows (NBR duplicate of numbers 1920-2 on the right):

Nos 72/3, 109-11, 299	Cowlairs	1880	1401/2/4-6/11
Nos 33, 98, 101/3-5	Cowlairs	1881	1424-9
Nos 19, 60, 74/5, 99, 147, 225/94	Cowlairs	1882	1454-61
Nos 52, 67, 174, 268	Cowlairs	1883	1462-5
Nos 76-9, 316, 483	Cowlairs	1884	1466-71

First of class withdrawn: 1424 (33) and 1463 (67) (10/1923)
Last of class withdrawn: 10462 (52) (8/1933)
None preserved

Below: Outline drawing of the Class 72 4-4-0T for suburban passenger and branch line duties as introduced in 1880.

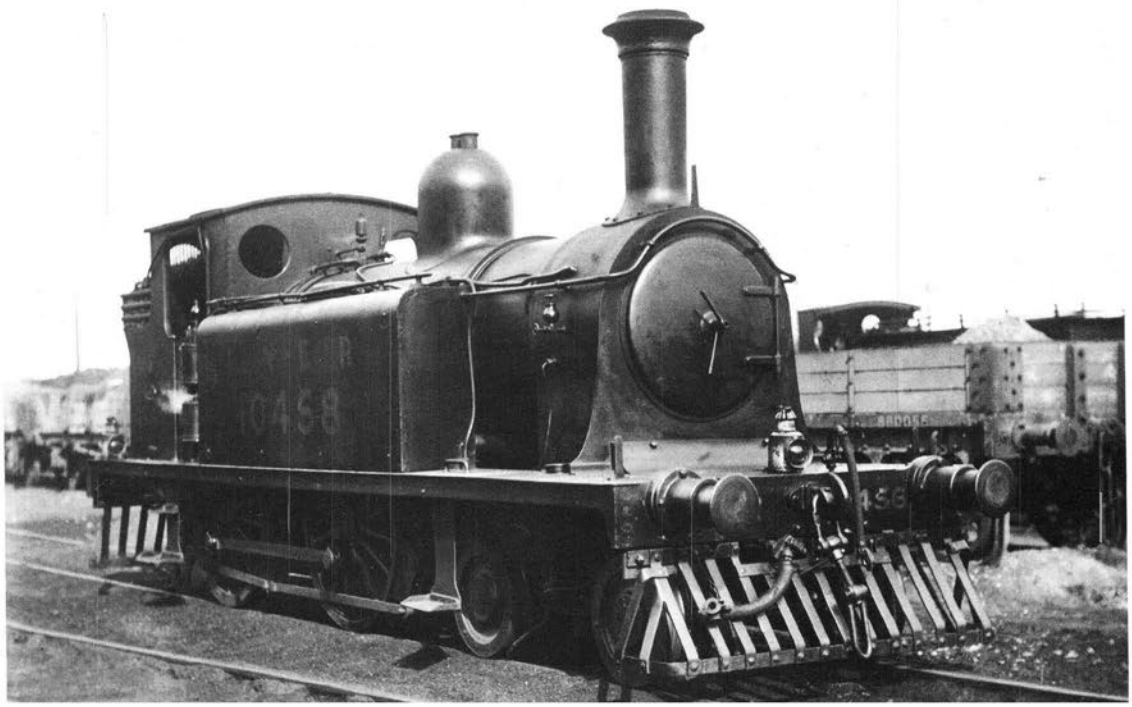




Top left: Suitable for work over lightly laid branch lines, and powerful enough to haul mixed loads such as seen in this delightful study of No 110, the Class 72 4-4-0T was Dugald Drummond's final design for the NBR.

Centre left: As LNER Class D51, No 10429 is seen on shed at Eastfield. The disc wheels to the leading bogie were a distinctive feature of the class. No 10429 is fitted at both ends for steam-heating and is dual-braked.
T. G. Hepburn/Rail Archive Stephenson

Below: LNER Class D51 4-4-0T No 10458 was one of the four locomotives sent to work the former Great North of Scotland unfenced branch line between Fraserburgh and St Coombs. For this purpose they were fitted with cowcatchers at each end, as seen on No 10458. The others were Nos 10456/61/2.
Rail Archive Stephenson



Locomotives for the Caledonian Railway

SECTION 9

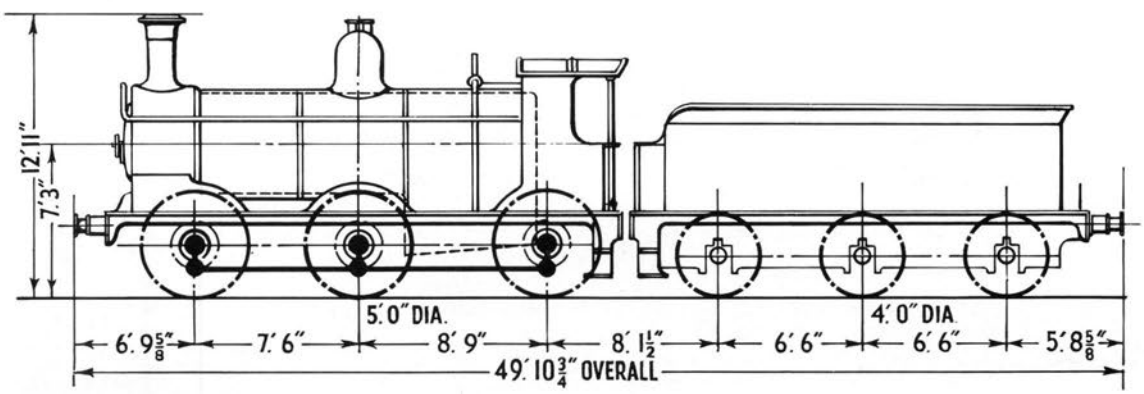
0-6-0 CR Classes 294 and 711, LMSR, BR 2, later 2F
Goods Engines
Introduced: 1883
Total: 244

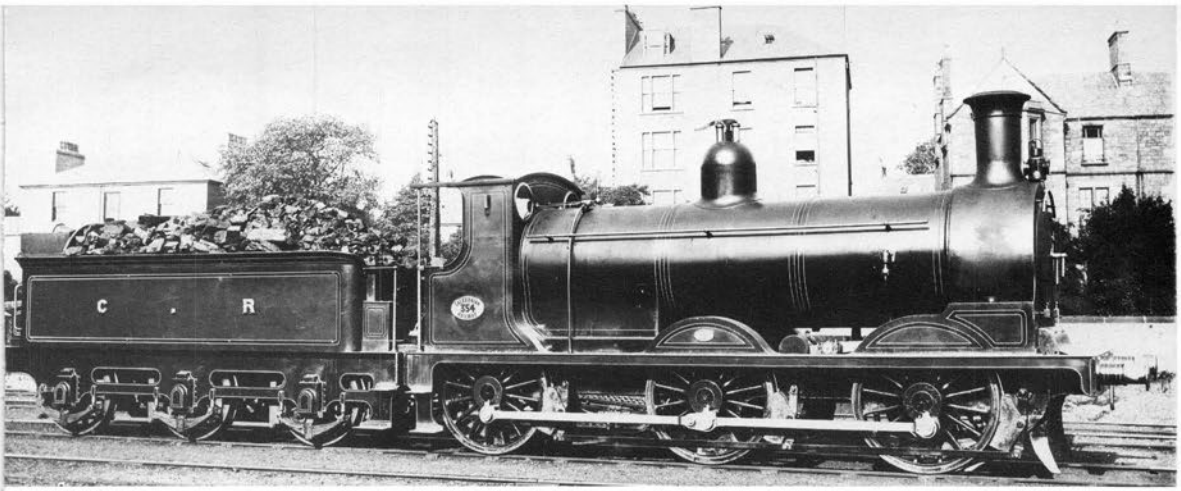
The first design produced by Dugald Drummond when he moved to the Caledonian Railway was destined to become the most numerous class built to his design, and the first batch was ordered just four months after he arrived at St Rollox. Due to the reorganisation of the workshops that he initiated it was necessary to place the contract outside and Neilsons got the work. By the time of his departure from the CR in 1890 the number of engines had increased to 95 and then building was continued by Smellie, Lambie and McIntosh, eventually raising the total to 244 in 1897; it was the 1895-7 engines that formed the '711' class version.

Based on Drummond's '34' class built by the NBR these goods engines introduced an entirely new and powerful fleet to the Caledonian, which had relied upon a rather varied collection of small under powered outdated designs, almost all four-coupled with outside cylinders and lacking in any standardisation. There were still many Stroudley features about the engine and tender, but the CR was spared the feedwater heating and pumps. The result was again a rugged, simple, reliable type capable of handling almost every kind of traffic, other than expresses, then worked by the company. Apart from changing tender features the design was relatively little altered, but Nos 583-7 of 1897 were built with condensing gear for the Glasgow 'Low Level' line. Until 1894 the engines had steam brake only, but in the next year No 709/10 appeared with automatic air brake equipment for train braking and were painted blue instead of black and all subsequent engines were similarly fitted and liveried.

From their introduction in 1883 the class became widespread over the entire system and in LMSR and BR days were used all over Scotland, replacing both HR and GSWR engines; a few were sent to the Leeds area about 1937, but their stay was short. Evidence of their power and the feeling for them remained throughout in the enginemen's name of 'Jumbos'. In 1917 25 were requisitioned and sent to France on ROD service; their numbers can be distinguished in the class list by the fact that they were immediately written off the Locomotive Register and put into the duplicate list on returning in 1920-1, being recognisable by the addition of 1000 to their numbers. Most of the renumberings listed took place in 1918 when they made way for the new '300' class, but a few had been changed much earlier. It will be seen that two, Nos 703/5 had two duplicate list numbers, being at first Nos 1703/5 and then Nos 1704/6; this was done to avoid confusion with ROD Nos 1703/5 (Robinson type 2-8-0) which were working on the Caledonian in 1920-1. The LMSR numbering of the class

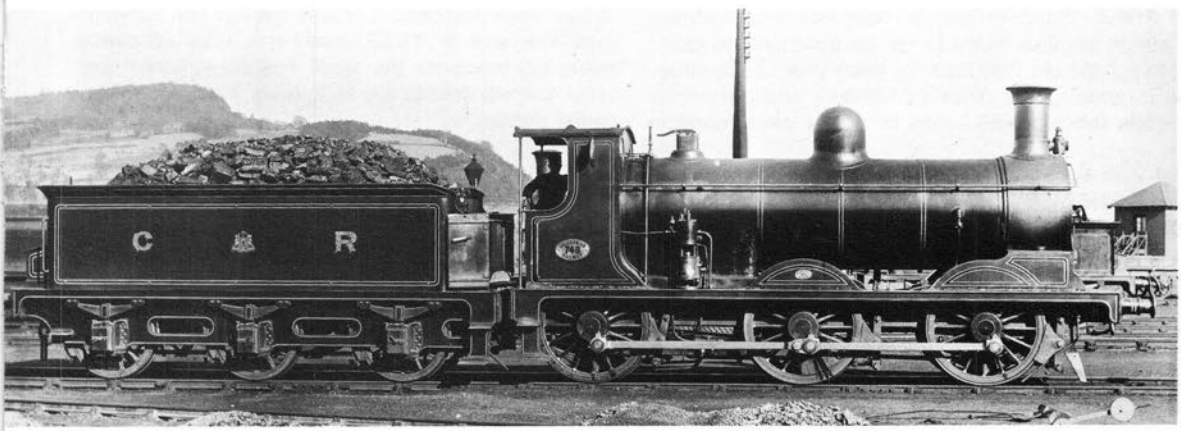
Below: Outline drawing of the Class 294 0-6-0 goods engine design of 1883.

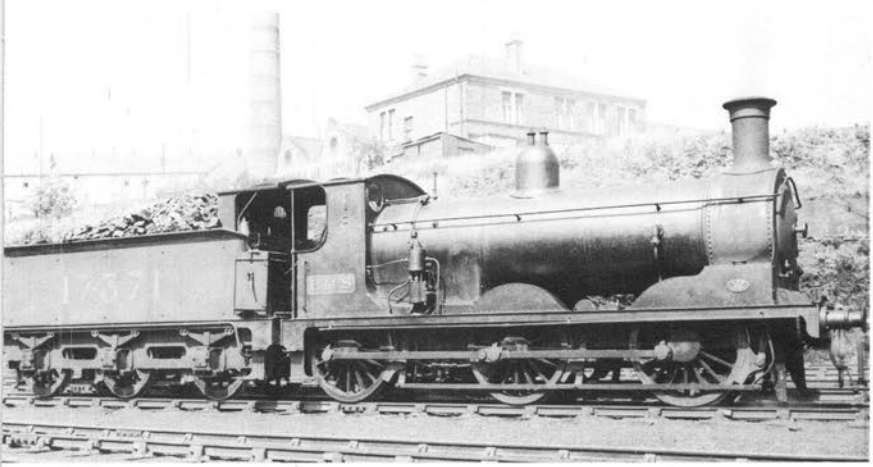




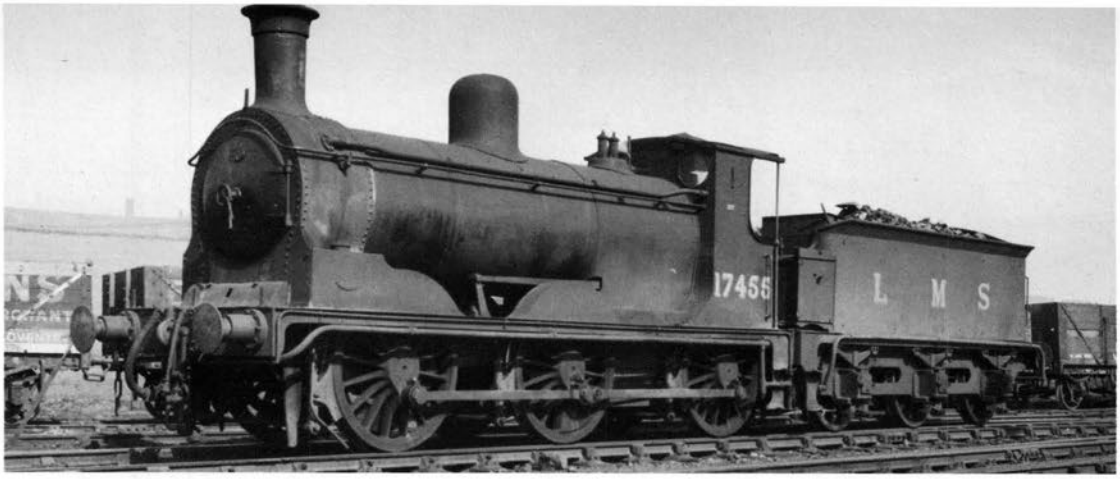
Above: Clearly derived from his NBR Class 34 0-6-0, Dugald Drummond's first locomotive design for the Caledonian Railway was also the most numerous built to his design, being constructed after his departure by Smellie, Lambie and McIntosh. Class 294 0-6-0 No 354, built at St Rollox in 1884, is seen here. Note the tender springing. *LPC*

Below: Class 711 0-6-0 No 748, built at St Rollox in 1895. The McIntosh version of Dugald Drummond's design, with Ramsbottom safety valves on top of the firebox, improved tender and Westinghouse air brakes. *LPC*





Left: LMSR No 17371, Class 2 0-6-0, formerly CR Class 294, No 701 of 1893. Tender cab fitted in matching Drummond style. Early LMSR black livery with a small vermilion panel on the cabside to carry the initials LMS. *Peter Rowledge collection*



Above: Photographed at St Rollox in April 1947, McIntosh '711' class version, No 17455 (LMSR Class 2F). Ross pop safety valves substituted for the Ramsbottom type but otherwise virtually unaltered since building. *J. M. Jarvis*

illustrates the method adopted by the new owners in 1923, the principle for renumbering Northern Division engines being to run up from the lowest to the highest old numbers for each year of construction, ignoring the different builders and the actual month, but in some cases mistakes were made in reading the date and putting an engine in the wrong batch or sometimes a run of numbers was kept together ignoring the different years.

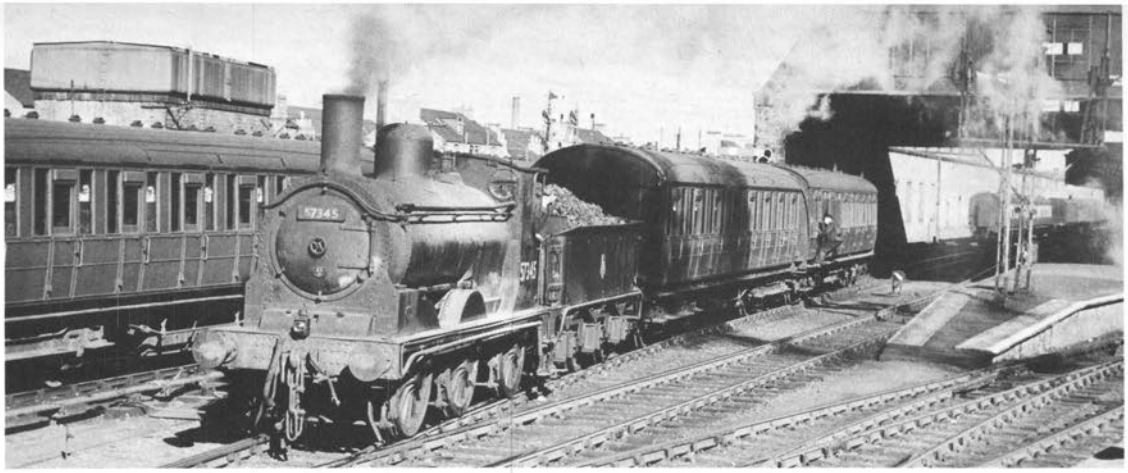
Such was the general robustness and general utility of the 'Jumbos' that the first withdrawal did not take place until 1946, when the only other Scottish Drummond engines in service were the 'Caley Pugs' (Section 12) and the last few survived until the end of 1963, making a total of eighty years existence for the type! The construction and renumbering details are as follows (LMSR numbers to the right):

Nos 259/60/2-4, 335/7*	Neilson	1883	17230-6
Nos 349-52	St Rollox	1883	17237-40
Nos 365/7/74, 403, 517/39, 1294*	Neilson	1883	17241-7/9
Nos 353/4	St Rollox	1884	17250/1
Nos 518-26, 681/3-9, 1517, 1680/2	Neilson	1884	17252-71
Nos 361-4, 690*	St Rollox	1885	17272-6
No 549*	St Rollox	1886	17248
Nos 355-60, 553/8, 680/2, 703/5/7, 1310/5/8/9/65*	St Rollox	1886	17277-94
Nos 340-8/66/8-71/80, 708, 1323/67*	St Rollox	1887	17295-17312
Nos 1403*, 404/6-9	St Rollox	1889	17312-8
Nos 410-5	St Rollox	1890	17319-24
Nos 372/3/5-9, 1374*	St Rollox	1891	17325-31/48
Nos 540-7/51/2, 691-6, 1548/9/53/8, 550/4-7*	St Rollox	1892	17332-47/9-52/7-61
Nos 559-63, 679-702	St Rollox	1893	17362-72
Nos 1704/6-8, 199, 200-2/56-8/61, 334/6/8/9, 704/6*	St Rollox	1894	17353-6/73-86
Nos 709/10, 1259/60, 1335/7*, 711-20	St Rollox	1895	17387-17402
Nos 736-49, 564-82	St Rollox	1896	17403-16/33-51
Nos 750-60, 329-33, 588-99, 761-5, 583-7	St Rollox	1897	17417-32/52-73

*The following engines were renumbered by the CR (first numbers in brackets):

Nos 259 (294), 260 (300), 262-4 (295-7), 335/7 (301/2), 365/7/74, 403, 517 (303-7), 539 (298), 1294 (294), 1517 (517), 1680/2 (680/2), 361-4 (691-4), 549 (309), 553/8, 680/2, 703/5/7 (311-4/6/7/20), 1310/5/8/9 (310/5/8/9), 1365 (695 then 365), 380 (322), 708 (321), 1323 (339 then 323), 1367 (367), 1403 (403), 1374 (374, 1548/9/53/8 (548/9/53/8), 1704 (703 then 1703), 1706 (705 then 1705), 1707/8 (707/8), 1259/60 (259/60), 1335/7 (335/7).

First of class withdrawn: 17248 (3/1946)
Last of class withdrawn: 57261/70/96, 57309/55/75 (11/1963)
None preserved



Above: The latterday substitution of a stovepipe chimney, to replace the worn-out Drummond-style original, did not enhance the looks of those engines which carried it! In plain BR black livery Class 2F No 57345 is seen here performing station pilot duties at Perth on 3 September 1955. *John Robertson*

Below: Some of the Drummond 'Jumbos' lasted well into BR steam days, and last withdrawals did not take place until 1963. In this delightful study taken in August 1959, No 57246 is seen near Killin Junction, on the 2.46pm to Killin. *J. C. Beckett*

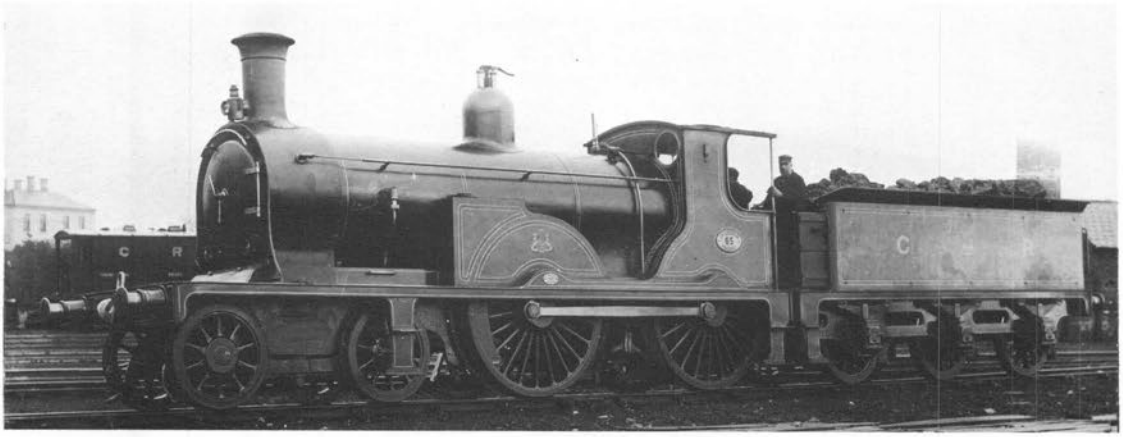
SECTION 10

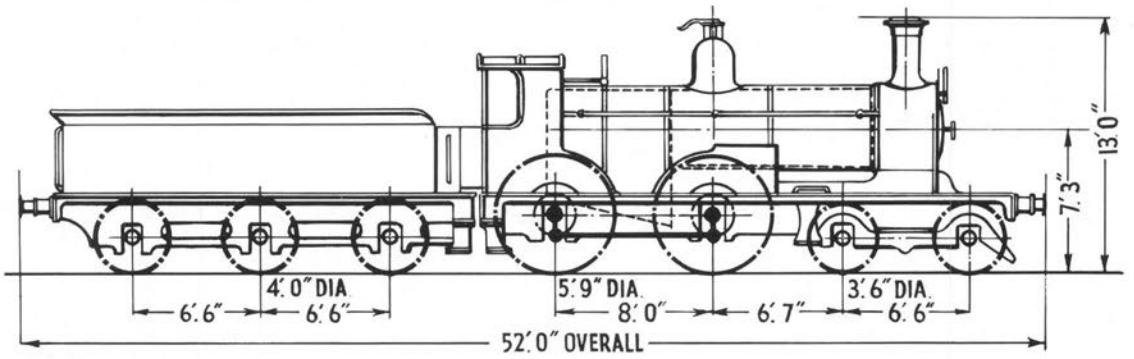
4-4-0 CR Classes '66' and '13' LMSR 2, later 2P Passenger Engines

Introduced: 1884 and 1894
Total: 29 ('66' class), 6 ('13' class)

The need for new passenger engines was just as great as that for goods and the first batch of the CR version of the NBR '476' class was ordered at the same time from Neilsons. There were many components in common with the '294' class and the bogie was of the Adams pattern. Air braking was fitted when new and the tender was identical with that of the goods engines apart from the brakes. After Drummond's departure Lambie produced a further version, the 13 class, which differed mainly in boiler details. With their introduction the company was able to not only accelerate its expresses but also eliminate most of the double heading that had been needed. No 124 was fitted initially with Bryce-Douglas valve gear, derived from marine practice, but it was a failure and within a year was replaced by conventional link motion. This engine was built for the 1886 Edinburgh Exhibition, being awarded a gold medal. After replacement of the valve gear No 124 was one of the 'crack' express locomotives of the company, gaining a rare distinction for Caledonian engines of being named when it was transferred to the Ardrossan services, becoming *Eglington*, after the Earl who owned most of the seaside town.

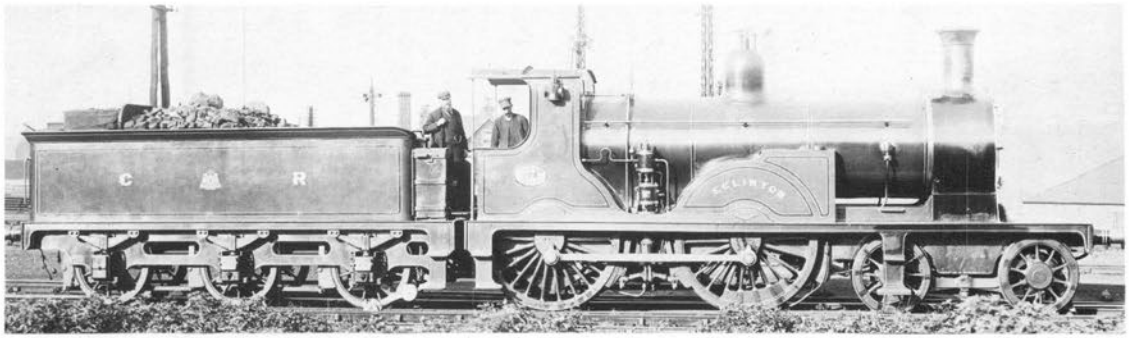
The 1889 engines, Nos 76-9, were the subject of experiments with high boiler pressures when Drummond set out to prove that compounding had

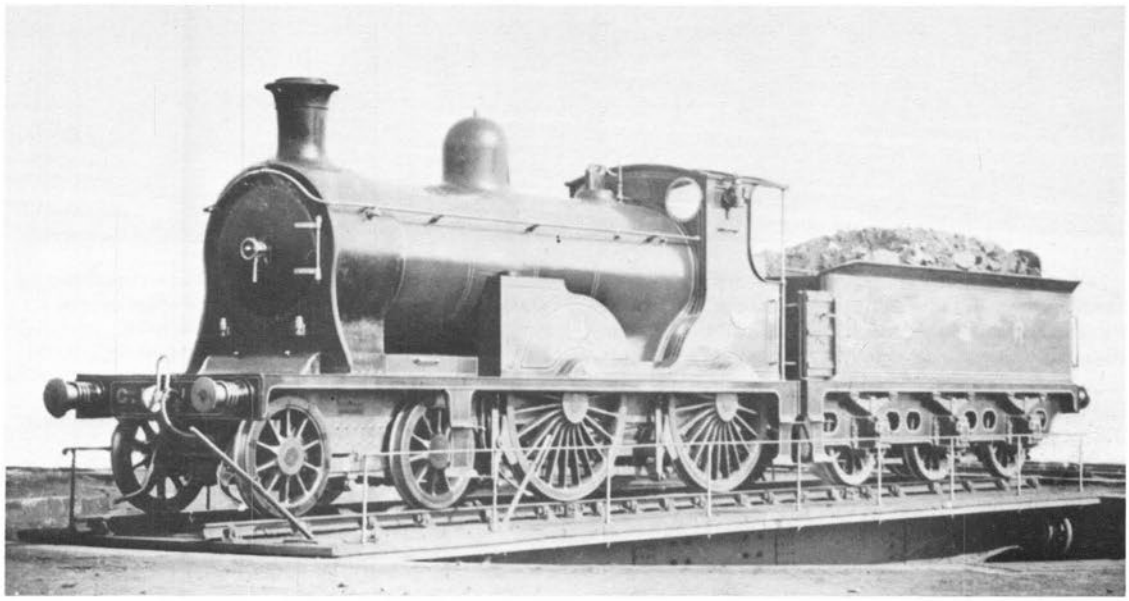




Top: Class 66 4-4-0 No 65, built at St Rollox in 1885 and displaying to perfection the elegant lines that Dugald had created for his locomotives by this time. Comparison with the photograph on page 22 shows the close family likeness to the NBR '476' class, and the LSWR derivative, Class C8. *LPC*

Above: Outline drawing depicting class in original condition.



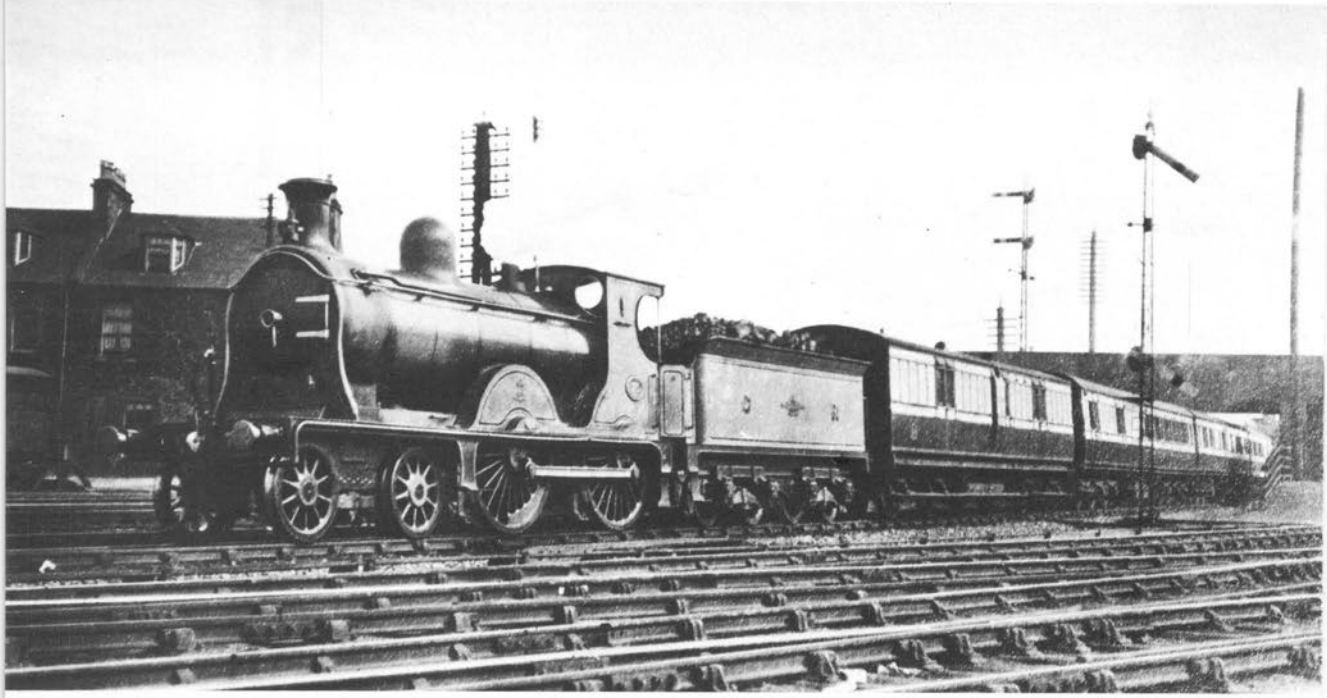


nothing to offer; some had a pressure of 200lb/sq in and despite poor quality coal, because of a current miners' strike, a remarkable economy in running was achieved, although Drummond was unable to gain full advantage, because drivers were reluctant to change their ways and refused to understand the advantages to be gained.

When the time came to reboiler the class two versions emerged and resulted in the LMSR renumbering the survivors in two batches. Thus Nos 14290-7 were the eight still running with the original size of boiler and Nos 14298/9, 14300-7/9 which had been reboilered, together with CR Nos 63-5 (condemned before 1923) with the larger boiler used by McIntosh on his Dunalastair 'I' class on 1897, being to all intents the same class. Nos 70 and 75 acquired bogie tenders about 1906. The LMSR number of CR No 1088 calls for comment; it was mistakenly identified as one of the '13' class, No 1015 (ex 15), because No 88 had been numbered 15 for a while in 1922 and then became No 1015 after the former engine had been scrapped! Almost all of the class had been renumbered into the CR duplicate list by the addition of 1000. The two surviving '13' class engines had not been fitted with larger boilers.

Top: Class 66 4-4-0 No 124 *Eglinton* was specially built by Dubs in 1886 as an 'exhibition engine', for display at Edinburgh where it won a gold medal. The locomotive featured Bryce-Douglas valve gear when new, but this was quickly removed once its use in service proved unsatisfactory, and conventional link motion replaced it. *LPC*

Above: McIntosh decided to rebuild some of the class with his 'Dunalastair I' class boiler. The first one, of 10, rebuilt in 1898 was No 71 seen here, and the resemblance to the 'Dunalastair I' design of 1895 is quite remarkable. Only the position of the front step handrail, and the 3,550gal tender are different. *A. B. MacLeod collection*



Above: The remaining nine engines rebuilt by McIntosh had the sandbox removed from the leading coupled wheel splasher. Illustrated is No 70, with 'Dunalastair I' class boiler, experimentally attached to a 'Dunalastair II' class bogie tender for testing on the 'Grampian Corridor Express'. Seen here leaving Stirling with the down train.
The late R. A. Chrystal/A. B. MacLeod collection

When new the class worked from Glasgow South Side (later Polmadie), Carlisle, Edinburgh, Perth and Aberdeen and it was not until 1904 that they were displaced from top link work, continuing to handle secondary jobs on the main line, some being moved to Dundee. During World War 1 Nos 70/3/5/6, 89, 91 were lent to the hard pressed Highland Railway. The dates of building and LMSR renumbering were as follows:

'66' class

Nos 66-75	Neilson	1884	14298, 14290-2/9, 14300, 14293, 14301, 14294, 14302
Nos 60-2	St Rollox	1885	14303, 14295, 14304
Nos 63-5	St Rollox	1885	
No 124	Dubs	1886	14296
Nos 76-8, 87	St Rollox	1889	
Nos 79, 84	St Rollox	1889	14297, 14306
Nos 83/8, 90	St Rollox	1891	14305/9,14307
Nos 89, 91, 113	St Rollox	1891	

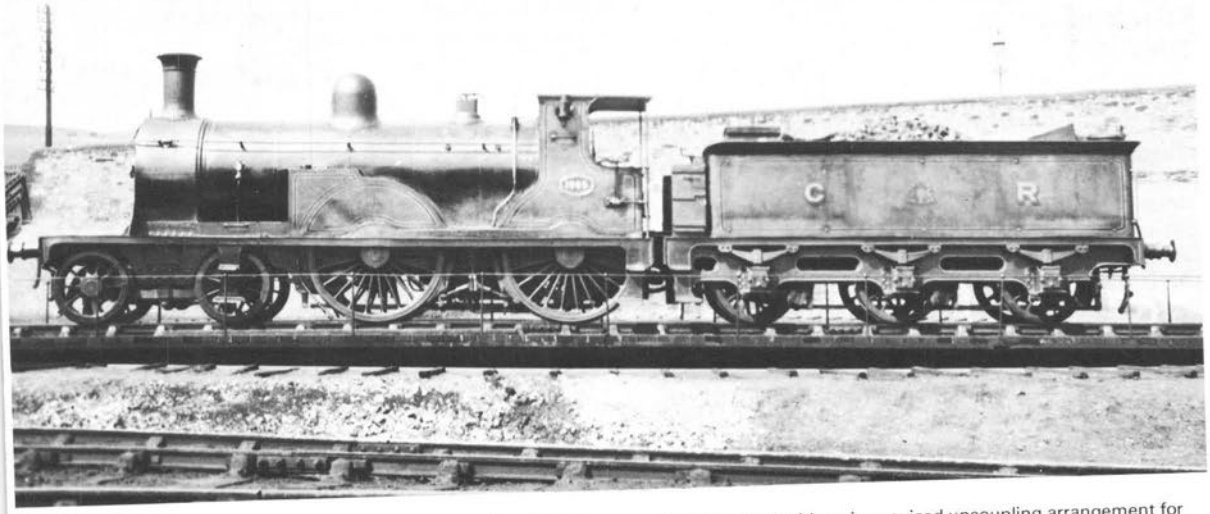
'13' class

Nos 13/8	St Rollox	1894	14308/10
Nos 14-7	St Rollox	1894	

All except Nos 14/6/7, 60/3, 76-8, 87 were renumbered into the duplicate list; other renumberings were 60 to 17 (then 1017), 62 to 1062 and then 87 and back to 1062, 88 to 1088 and then 15 and back to 1088. The two classes became 1066 and 1013 once transfer to duplicate list took place. Only nine ran with LMSR numbers, Nos 14290/7/8, 14301/2/4/8-10.

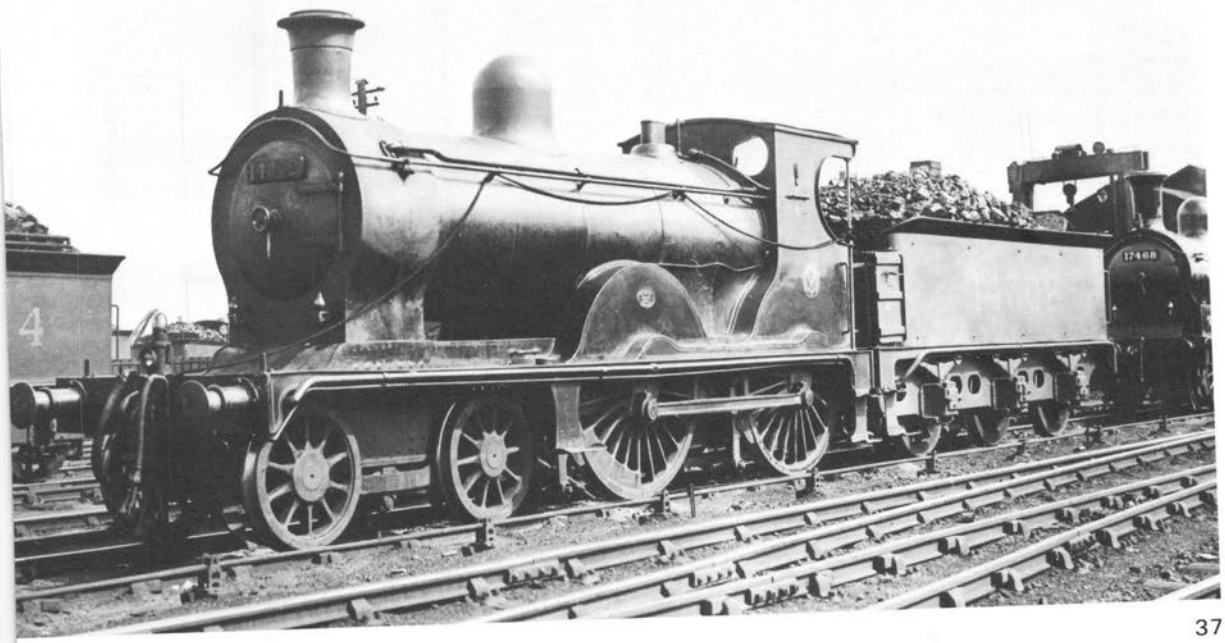
First of class withdrawn: '66' class 63 (7/1916); '13' class 17 (12/1916)
Last of class withdrawn: '66' class 14297 (11/1928); '13' class 14310 (12/1930); 14298 (1/1930*)
*Dunalastair I boiler verison.

None preserved



Above: CR No 1069 (formerly No 69) was reboilered with a 'Jumbo' 0-6-0 goods boiler in 1901, and is seen here in this non-standard form. *A. B. MacLeod*

Below: Fitted with an improvised uncoupling arrangement for banking duties, consisting of a rope along the boiler side to the cab, ex-CR 4-4-0 No 75 is seen here as LMSR Class 3 No 14302, in full crimson lake livery with crest on the cabside. (McIntosh boiler fitted). *T. G. Hepburn/Rail Archive Stephenson*



0-4-4T CR Class 171; LMSR 1, later 1P Light Passenger Tank Engines

Introduced: 1884
Total: 24

For the lighter branch lines Drummond revised his NBR '72' class 4-4-0T so that the bogie trailed, but otherwise the principal dimensions were generally similar to the Cowlairs engines, and there were many parts standard with his other CR classes. Between 1884 and 1891 there were 24 built at St Rollox, 15 being handed over to the LMSR. Unusually for Drummond engines the firebox had a flat grate. The solid bogie wheels of the NBR engines were repeated. Distinctly odd was the fitting of levers to operate the cylinder drain cocks and sanding gear at the *rear* of the cab and the brake valve on the cab side sheet behind the entrance, not in fact a disadvantage when running bunker first. The 1884 batch had steel frames, an early example of such. The 1889 and 1891 batches had enlarged water and bunker capacity. The automatic air brake was fitted when built and train heating apparatus later on.

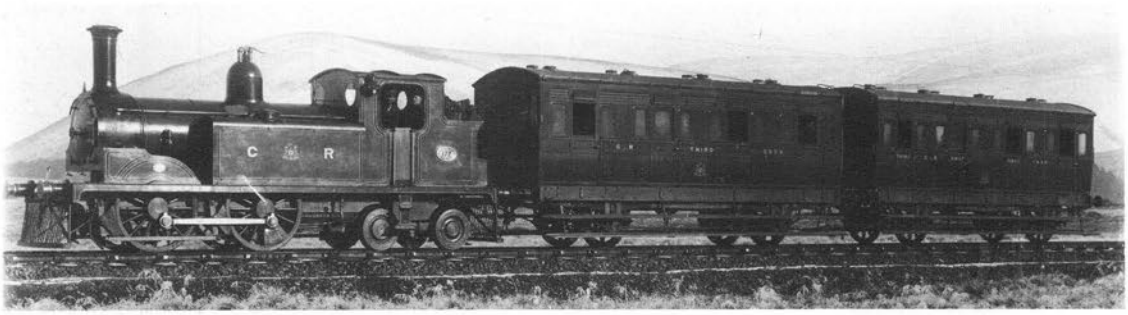
In later years there was some displacement from branch lines, several finishing their days as station pilots. The final survivor, outlasting others by 11 years, went to the far north, being one of the few engines available for the Lybster branch, being condemned when that line closed.

The engines were built as follows (LMSR numbers on the right):

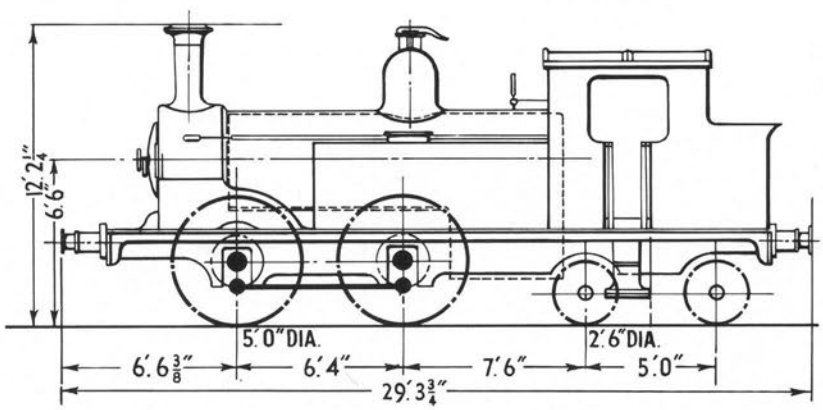
Nos 171/3	St Rollox	1884	
Nos 172/4/5	St Rollox	1884	15100-2
Nos 177/8, 229	St Rollox	1886	15103-5
Nos 228/30/1	St Rollox	1886	
Nos 222-4/7	St Rollox	1889	15106-9
Nos 225/6	St Rollox	1889	
No 189	St Rollox	1891	
Nos 190-4	St Rollox	1891	15110-4

No 190 was the only one not to be renumbered to the duplicate list, when they became known as the '1171' class. Only four ran with LMSR numbers, 15103/4/10/4.

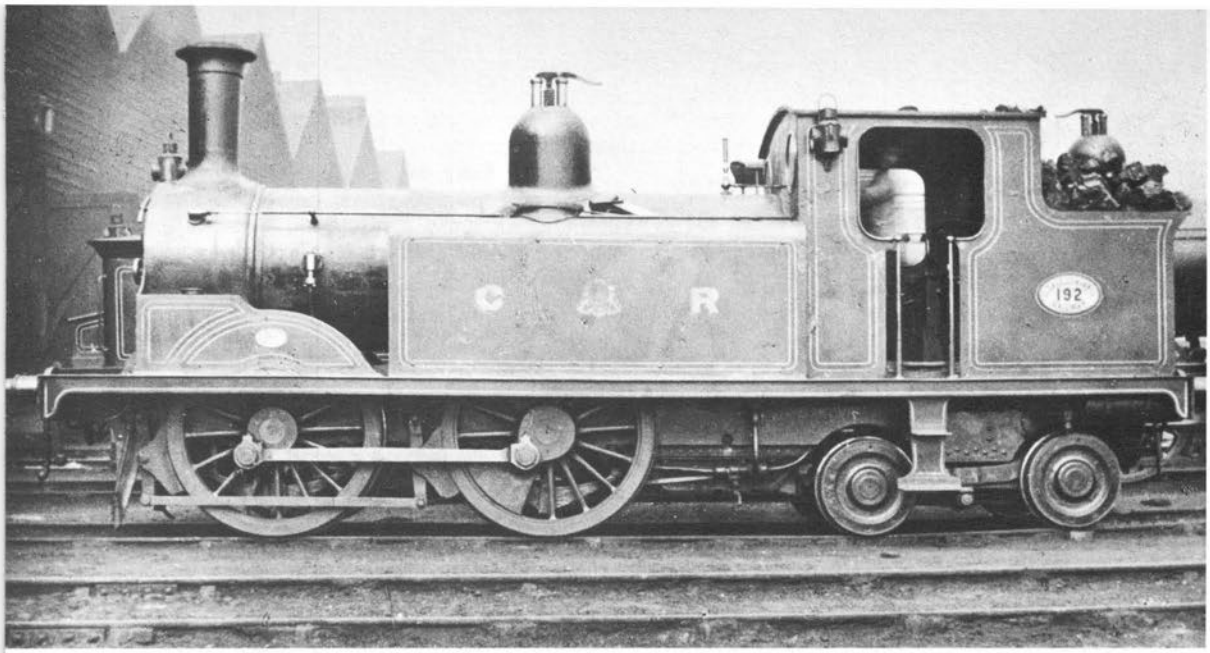
First of class withdrawn: 1189 (4/1917)
Last of class withdrawn: 15103 (12/1944)
None preserved



Above: This truly delightful study of a CR branch train of the 1880s shows a typical duty of the '171' class 0-4-4T design introduced by Dugald Drummond in 1884. This was a revised version of his NBR '72' class; with the bogie placed behind the coupled wheels. Note the lightweight cowcatchers fitted to No 172.
Ian Allan Library

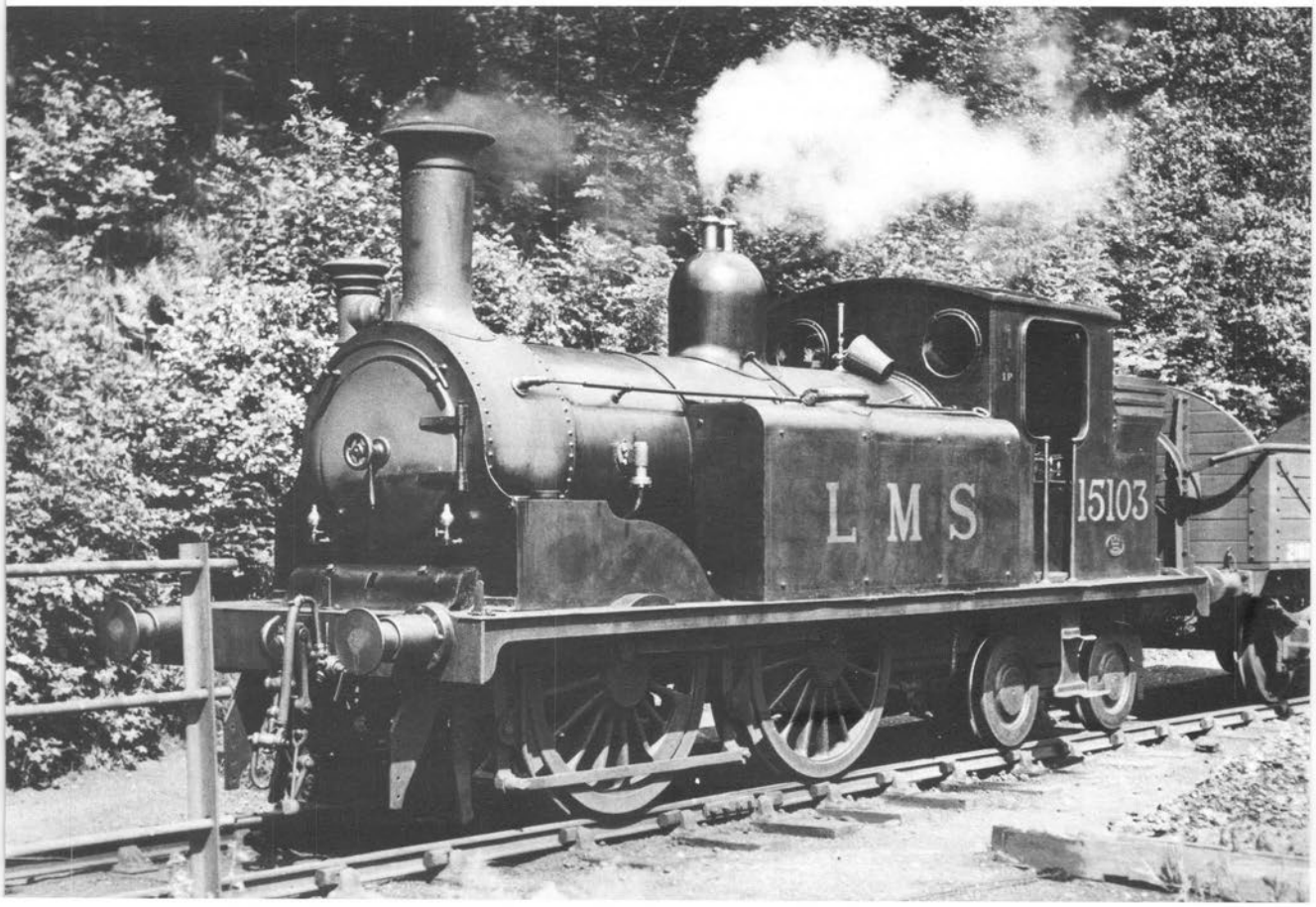


Right: Outline drawing of the '171' class 0-4-4T, introduced in 1884



Above: The 1889 and 1891 construction batches featured a larger bunker, without the toolbox behind. No 192, built at St Rollox in 1891 is seen here.
The late R. A. Chrystal/A. B. MacLeod collection

Below: LMSR Class 1P 0-4-4T No 15103, in black livery with red lining, at Loch Tay on 28 July 1931. The bunker capacity had been further enlarged by fitted coal rails and boards. Brackets under bufferbeam for attachment of cowcatcher or small snowplough. Note the bucket hanging somewhat indecorously from the 'Caley' hooter! *H. C. Casserley*



SECTION 12

0-4-2ST CR Class 262 and 0-4-0ST Class 264; LMSR/BR unclass, later OP and OF

Branch Passenger (262 Class) and Shunting Tank Engines (264 Class)

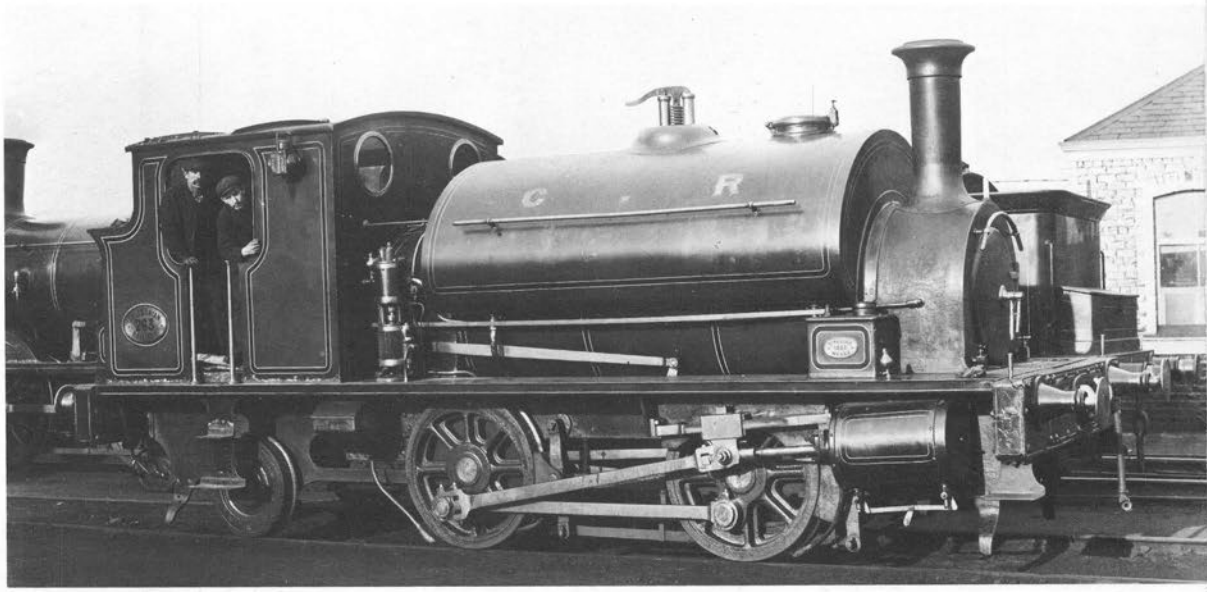
Introduced: 1885
Total: 2 (0-4-2ST), 24 (0-4-0ST)

An early requirement that had to be dealt with by Drummond was the provision of small shunting engines for Stobcross and the General Terminus Docks in Glasgow. The first order was for 10, but two, Nos 262/3, were completed as 0-4-2ST. The design originated from a Neilson pattern, of which the CR then had 14 in service and in fact Drummond had ordered two from the makers for the NBR (Nos 546/7) which were delivered towards the end of 1882 after he had left the NBR. The main details were copied from the Neilson engines, but Drummond's style of chimney, smokebox and cab fittings were used. There were however non-Drummond features in the shape of the wheels which were of cast iron with eight T-section spokes, right hand drive and the flat top of the inner firebox instead of his usual eliptical crown. The six-wheeled engines had a full length cab with a proper bunker and a large toolbox, but the four-wheelers were devoid of a bunker, carrying coal either side of the firebox, or later in small wooden trucks with some $1\frac{1}{2}$ton, acting as a tender. Most had wooden dumb buffers.

The pair built as 0-4-2ST worked the Killin branch for about 10 years, being fitted with the automatic air brake and painted blue, but the rest relied on their handbrakes, being used solely in yards and docks. No 16007 was regarded as departmental stock by the CR and LMSR at the amalgamation and when withdrawn was replaced by No 16005. A few worked further afield, No 16020 at Burton-on-Trent after World War 2 and then at Bromsgrove in 1954-5 (where it served only to preheat the fuel for the former LNER Garratt when it had a spell as an oil burner on the Lickey incline), and BR No 56025 which after some years at St Rollox was sent south to Crewe Works, where No 56032 also worked for a time.

Two more Drummond engines of this type remain to be mentioned. They were built by Neilson in 1887 to the order of the Glasgow and Paisley Joint Line Committee, being numbered 1 and 2 and painted red, with the lining of the CR passenger style livery. Both the CR and GSWR were responsible for one each, although the former maintained both, until in 1920 the GSWR accounted for both. The LMSR allotted them numbers 16050/1, but neither was renumbered.

Below: The first two engines, were Nos 262/3, built as 0-4-2ST ('262' Class), with an enclosed cab and small bunker, specially for the Killin branch with blue livery and air brakes. *LPC*



The engines were built as follows (duplicate list numbers, where applicable, are shown in brackets):

0-4-2ST

Nos 262/3 (1262/3)	St Rollox	1885	15000/1

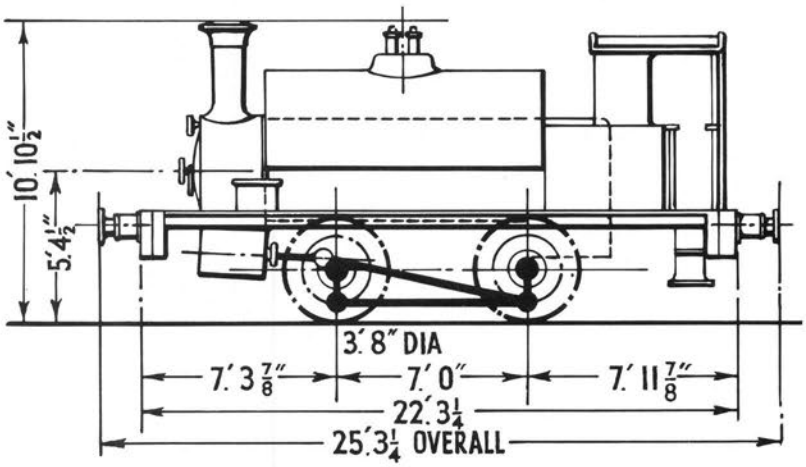
0-4-0ST

Nos 264/5 (1264/5)	St Rollox	1885	16012/3
Nos 266-8/70	St Rollox	1885	16008-11
No 269 (1269)	St Rollox	1885	
Nos 271 (1271)	St Rollox	1885	16014
Nos 615-8/20	St Rollox	1889	16015-9
No 619	St Rollox	1889	
Nos 510-5 (1510-5)	St Rollox	1890	16020-5
Nos 611-4	St Rollox	1895	16026-9
Nos 621-8	St Rollox	1900	16030-7
Nos 463, 431*	St Rollox	1908	16038/9

*Renumbered 265/9 in 1922.

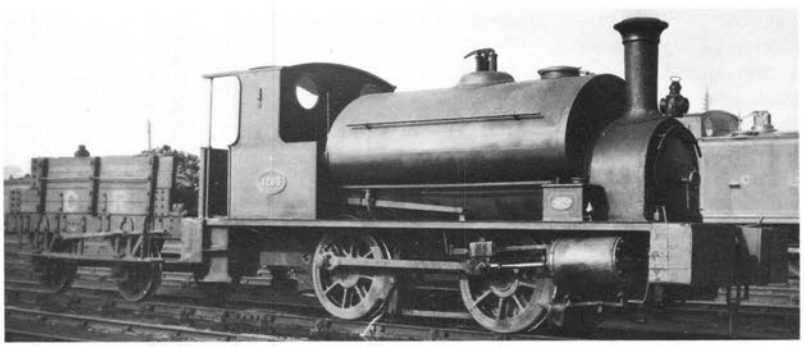
All but those intended to be LMSR numbers 15000, 16012/4/7/8/21/3/36 were renumbered and 12 became BR Nos 56001/20/5/7-32/5/8/9.

First of class withdrawn: '262' class 1262 (6/1928); '264' class 1269 (3/1921)
Last of class withdrawn: '262' class 15001 (4/1947); '264' class 56039 (10/1962)
Both Glasgow & Paisley Joint engines were withdrawn in 3/1924.
None preserved

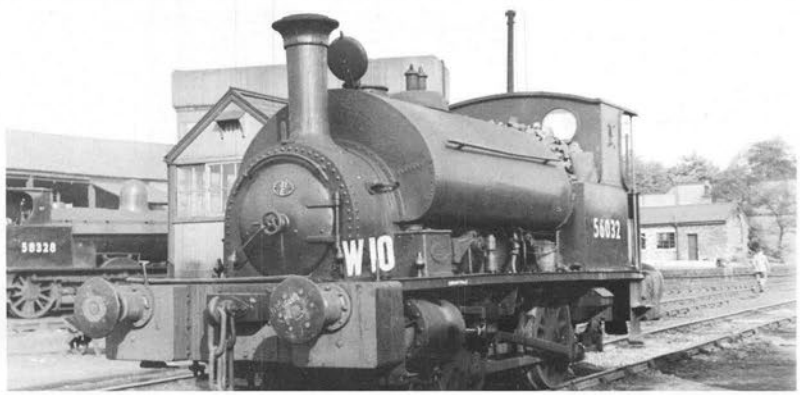


Left: Outline drawing of the '264' class 0-4-0ST, introduced in 1885 for shunting duties.

Below left: The 34 Class 264 engines were built as 0-4-0ST, without bunker and with a semi-open cab. No airbrakes were fitted and they carried the goods black livery, being intended solely for use in yards and docklands areas. To increase their meagre coal-carrying capacity some were attached (as seen here) to small wooden trucks, acting as tenders with a capacity of some 1½ton. No 1265 is illustrated (originally No 265, built at St Rollox in 1885) showing the 'dumb' wooden buffers carried by most of the class. *Ian Allan Library*



Bottom left: Some of the Caley 'Pugs' lasted into BR days and their robust but lightweight design was much appreciated for use in works sidings and similar duties. Fitted with conventional buffers, and in clean plain black BR livery, No 56032 takes a rest (note open tank filler) in Crewe works yard, in the summer of 1949. *Frank F. Moss*



SECTION 13

4-2-2 CR Class 123; LMSR 1, later 1P Express Passenger Engine

Introduced: 1886
Total: 1

There were two engines on show at the 1886 Edinburgh International Exhibition in Caledonian livery. One, No 124, has been mentioned in Section 10, but the other was a unique Single, built by Neilson, which alone of Dugald Drummond's Scottish engines has survived.

As so often happened in the past when a locomotive builder wanted to display his abilities he put on show an engine built to a design already supplied, but in this case it varied in several respects, the most important that it was not a coupled type as supplied in 1884. There can be little doubt that the idea of an exhibition engine germinated at Neilsons (see page 7, showing their initial thoughts, clearly aimed at the Caledonian as the likely purchaser in due course). Outside cylinders had been a feature of previous CR practice and no doubt the fame and performance of the Great Northern's Stirling Singles was an influence, but Drummond had his own views on outside cylinders, and probably expressed them in a forthright manner. CR minutes suggest that the company decided to become the *exhibitor* in conjunction with the builders of both engines and therefore the designs had to be acceptable to all parties. Thus No 123 became almost pure Drummond, although introducing a number of features to Caledonian practice. Cylinders and motion were copied directly from the '66' class and the boilers were similar, but slightly smaller in diameter and the firebox was shorter. Holt's compressed air sanding system was fitted to aid adhesion, the frames were steel and Adam's vortex blastpipe used. A special finish was provided for the exhibition and like No 124 a gold medal was awarded. After the closure of the exhibition at the end of 1886, the engine was taken into CR stock, being sent to Edinburgh shed to work to Carlisle and back daily. A second period of fame came in 1888 when it was the only CR engine used on the 'Race to Edinburgh', trains, putting up very distinguished performances.

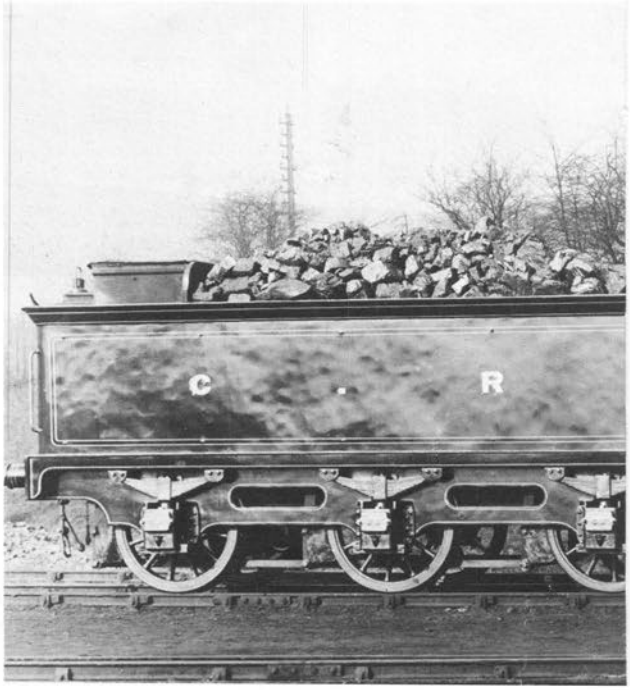
After some years of use between Perth and Aberdeen No 123 ceased to be used on ordinary revenue traffic, spending most of the time hauling the directors' saloon or running as the Royal Train pilot; indeed the 'Caley' regarded the engine as departmental stock and so did the LMSR until 1925, but it became No 14010 in the latter's list, having been No 1123 in the CR duplicate list. In 1930 the engine was returned to ordinary traffic, working between Perth and Dundee until 1935. Fortunately the LMSR decided to preserve the engine and for many years it remained as a static museum piece, restored to CR livery. However in this guise No 123 toured Britain in 1954 with an exhibition train, which had a Royal Train theme.

It was in 1958 that British Railways restored No 123 to working order and then it worked a number of specials in England as well as Scotland until retirement to a permanent resting place came in 1961.

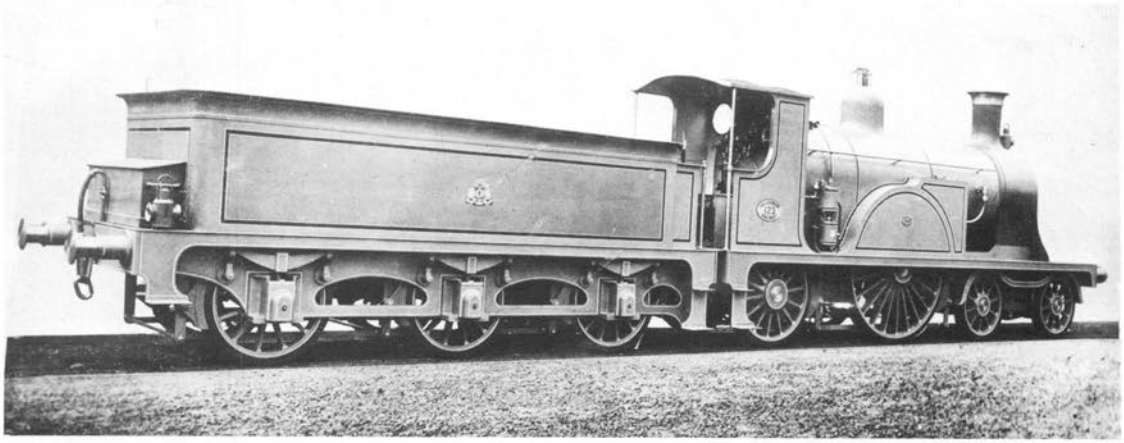
Withdrawn: 3/1935
Now preserved at Glasgow Museum of Transport

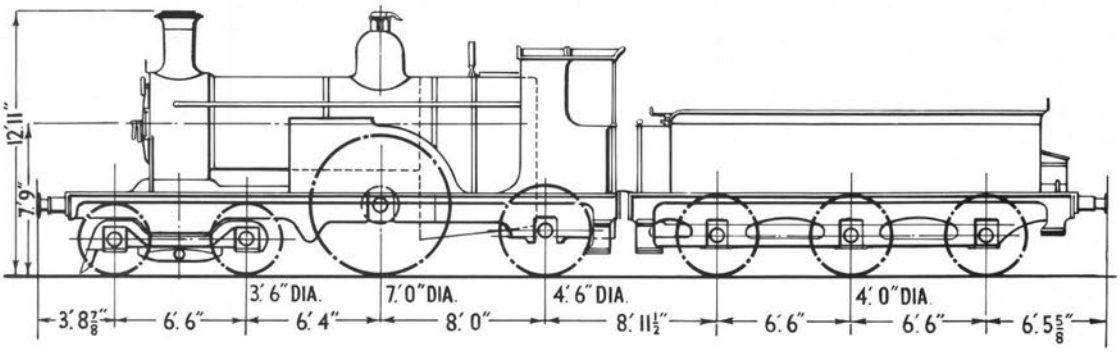
Right: This fine study of No 123 shows the replacement tender, and the chimney cap painted black. One year in service elapsed before the CR actually purchased the locomotive, despite the fact that this 'one-off' example had rather limited usefulness. Perhaps her greatest claim to fame was her use as the Royal Train pilot, in Queen Victoria's reign. *Ian Allan Library*

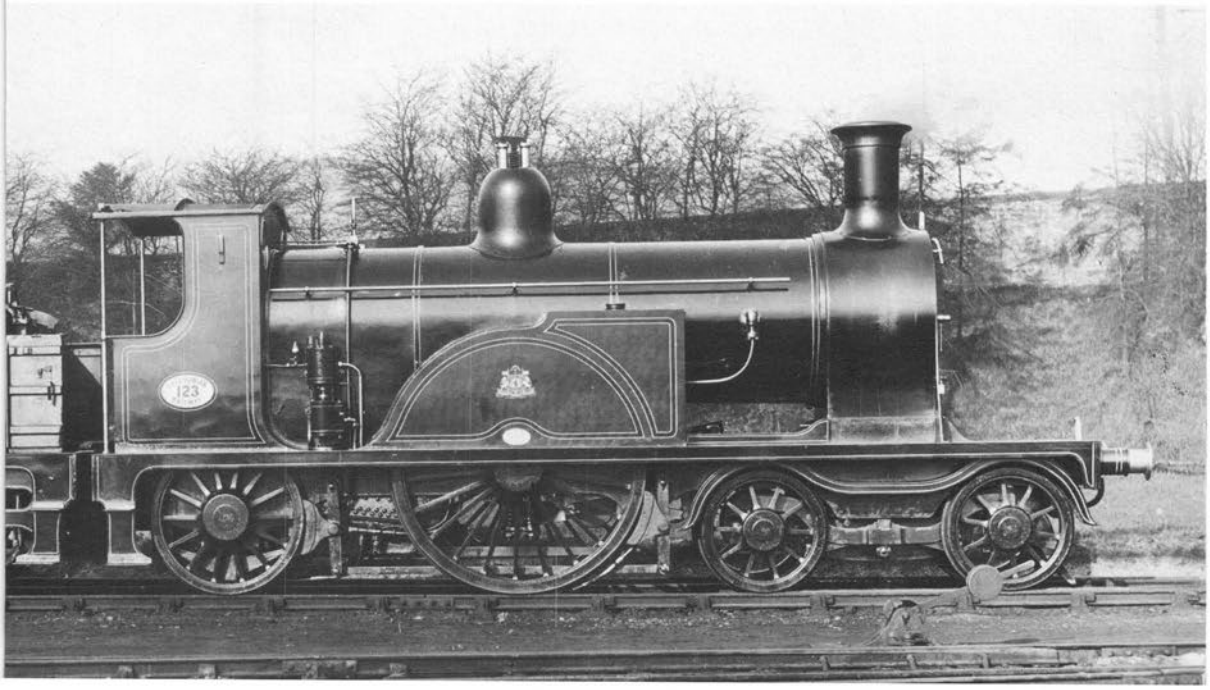
Right: Outline drawing of the '123' class 4-2-2 express passenger engine, introduced 1886.

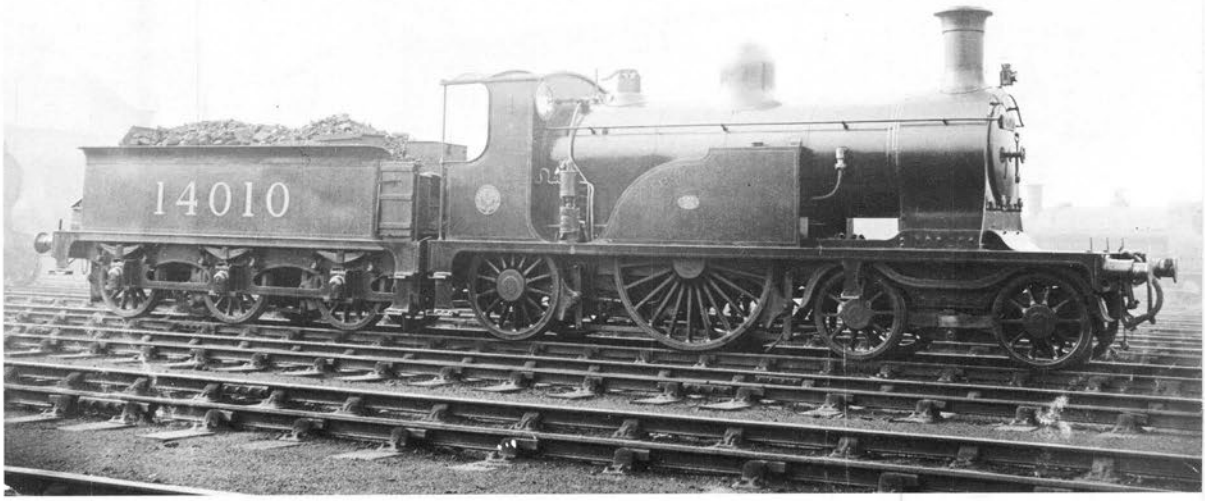


Below: The unique Single No 123 built by Neilsons in collaboration with Dugald Drummond, and awarded a gold medal at the 1886 Edinburgh Exhibition. Photographed in workshop grey finish (but note the polished chimney cap) and showing the original tender fitted (replaced by a standard one in 1888). This first tender had a water capacity of only 2,850gal and space for about 5ton of coal. *LPC*









Above: Pictures of the 'Caley Single' in LMSR crimson lake livery, with the number 14010, are a rarity; this one was taken at Balornock shed on 28 July 1925. It shows the 1924 replacement boiler, still carried today, which is quite unlike the Drummond original. *W. E. Boyd*

Below: With her original tender restored (which somewhat remarkably survived over the years) but with the latterday boiler, the preserved single, CR No 123, is seen here leaving Perth for Dundee with an enthusiasts' excursion from Glasgow (Buchanan Street) on Saturday 10 May 1958. *David A. Anderson*

SECTION 14

0-6-0ST CR Class 385; LMSR 3, later 3F
Shunting Tank Engines
Introduced: 1887
Total: 30

Most of the company's shunting was undertaken by old four-coupled tender engines, there being but 23 pre-Drummond 0-6-0Ts. To meet the deficiency he produced a batch of six saddle tanks in Jubilee Year 1887 which resulted in their being known as the 'Jubilee Pugs', it being rare for any CR class to acquire an enginemen's nickname. Further additions increased their number to 30 by 1890. Possibly of all the Drummond classes they were least characteristic in appearance, having a Stirling pattern cab, open at the rear, but with the rear of the bunker extended upwards to form a weather-board. The wheels were cast iron with 10 T-section spokes and the footplate arrangements retained some past practices, having the steam brake valve on the right and reversing lever to the left of the firebox, with levers for the cylinder cocks and gravity sanding on the left. Painted black the class spent its time in the various good yards around Glasgow and Edinburgh, later spreading to Motherwell, Perth and Aberdeen.

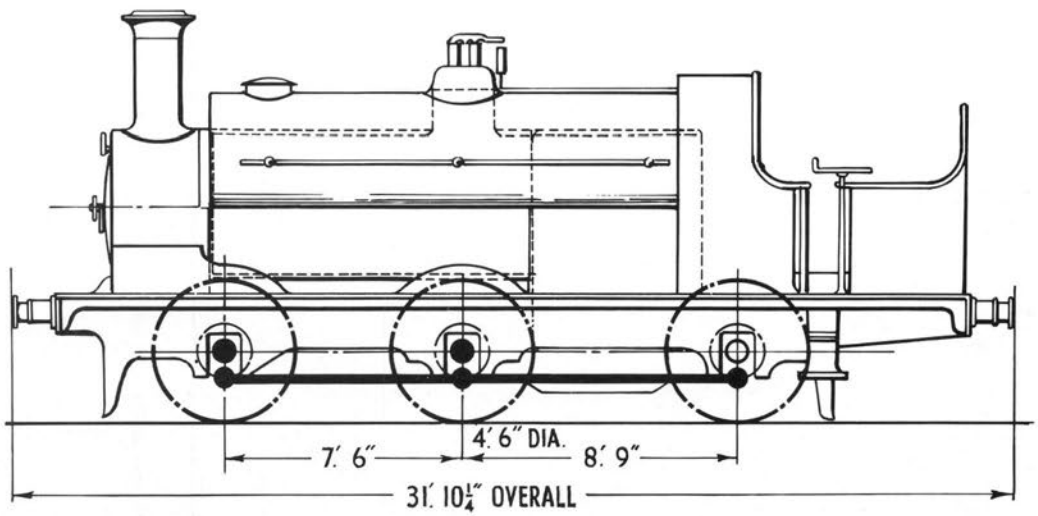
The engines were built as follows (LMSR numbers on the right):

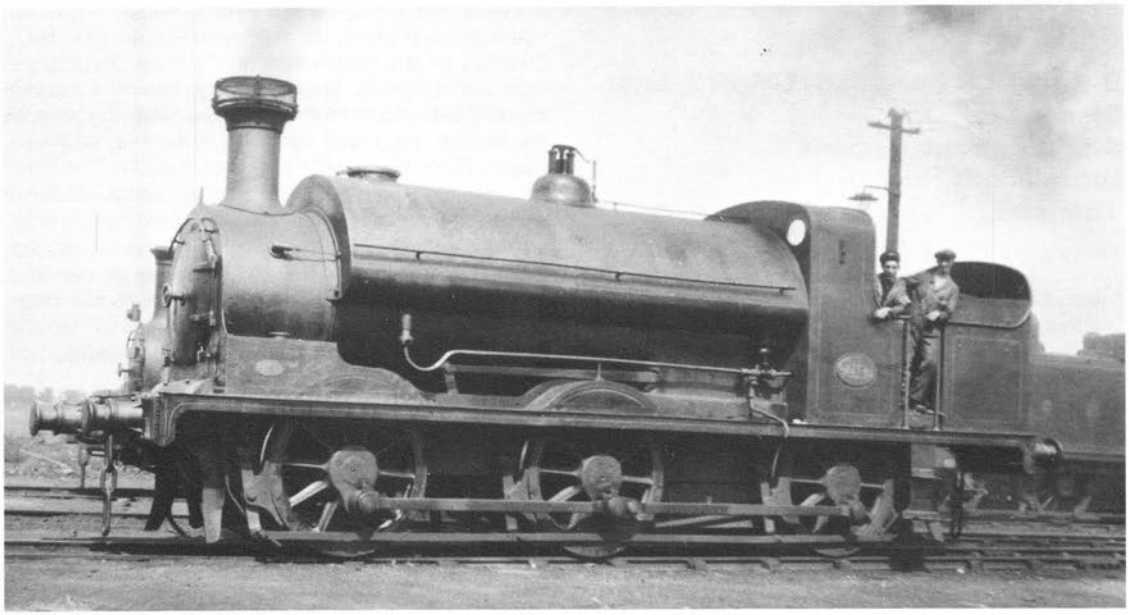
Nos 216/7, 383-5, 505-7*	St Rollox	1887	16200-7
Nos 218-21, 1232/3/5*	St Rollox	1888	16208-14
Nos 386/7, 1234*	St Rollox	1888	
Nos 388/9/91/2/8/9, 400-2, 1395*	St Rollox	1890	16215-24
Nos 1394/6*	St Rollox	1890	

*Former numbers were 383 (ex 539), 384 (ex-538), 1232-5 (ex-232-5), 1394-6 (ex-394-6).

Only those that became numbers 16202/4/11/2/14/20/1 were renumbered by the LMSR.
First of class withdrawn: 1394 (9/1922)
Last of class withdrawn: 16211 (12/1930)
None preserved

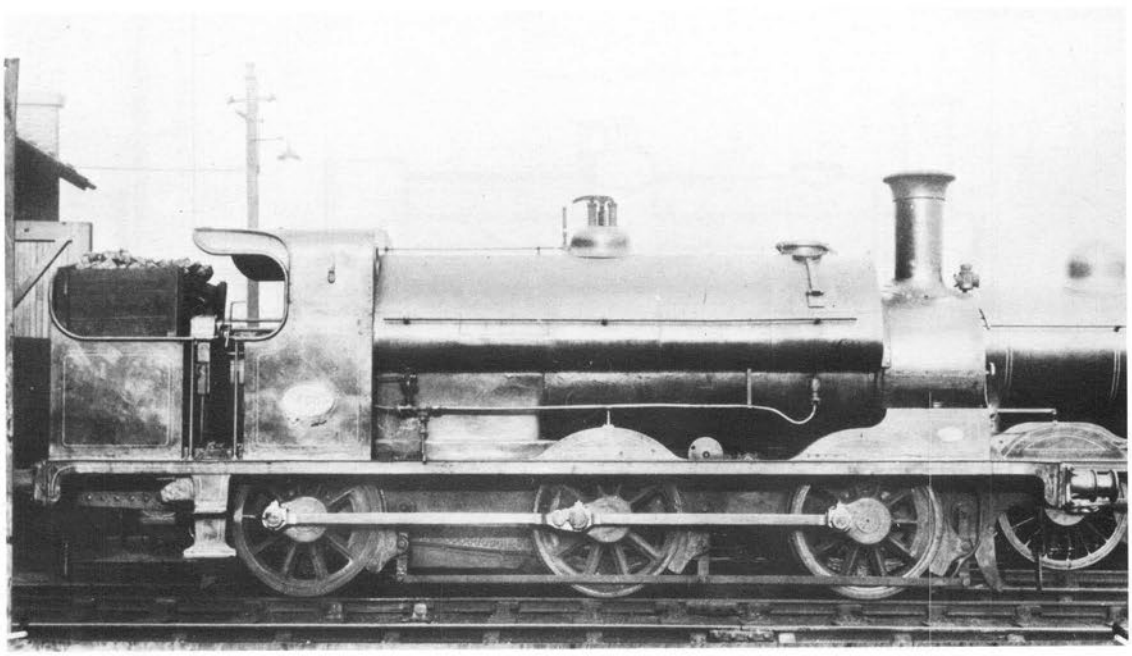
Below: Outline drawing of the Class 385 0-6-0ST design of 1887.





Above: Still in CR livery, two and a half years after the Grouping Class 385 0-6-0ST (LMSR Class 3, later 3F) No 216 was photographed at Grangemouth on 29 July 1925. Spark-arrestor fitted to chimney, which is slightly shorter than standard. No 216, the first of the class, was built at St Rollox in 1887, and eventually carried the LMSR number 16200. *A. G. Dunbar*

Below: The primitive cab design of the '385' class, as first introduced, was quite uncharacteristic of Dugald Drummond's work, and clearly gave inadequate shelter to the enginemen in inclement weather! The locomotive seen here, No 400 built in 1890, was one of the examples to carry an extended cab roof (still strangely antiquated in concept), and it also had an enlarged coal bunker, with wooden sides within the original. *The late R. A. Chrystal/ A. B. MacLeod collection*



SECTION 15

4-4-0 CR Class 80; LMSR 1, later 1P Light Passenger Engines

Introduced: 1888
Total: 12

For services from Glasgow to Gourock St Rollox built a scaled down version of the '66' class in 1888-91; unusually amongst 'Caley' engines there was a class title, although unoffical, of 'Coast Bogies' which clearly defined their duties. The coupled wheels were smaller than the '66' class, but the bogies, suspension and layout of the brakegear were copied from that class; whilst the cylinders and motion were similar (with many parts interchangeable) to the 'Jumbos'. The boiler barrel was the same length as that of the '66' class but was of smaller diameter and because of the shorter coupled wheelbase the firebox was shorter. Details influenced by the 1886 Exhibition engines were the steel frames, air sanding and vortex blastpipe.

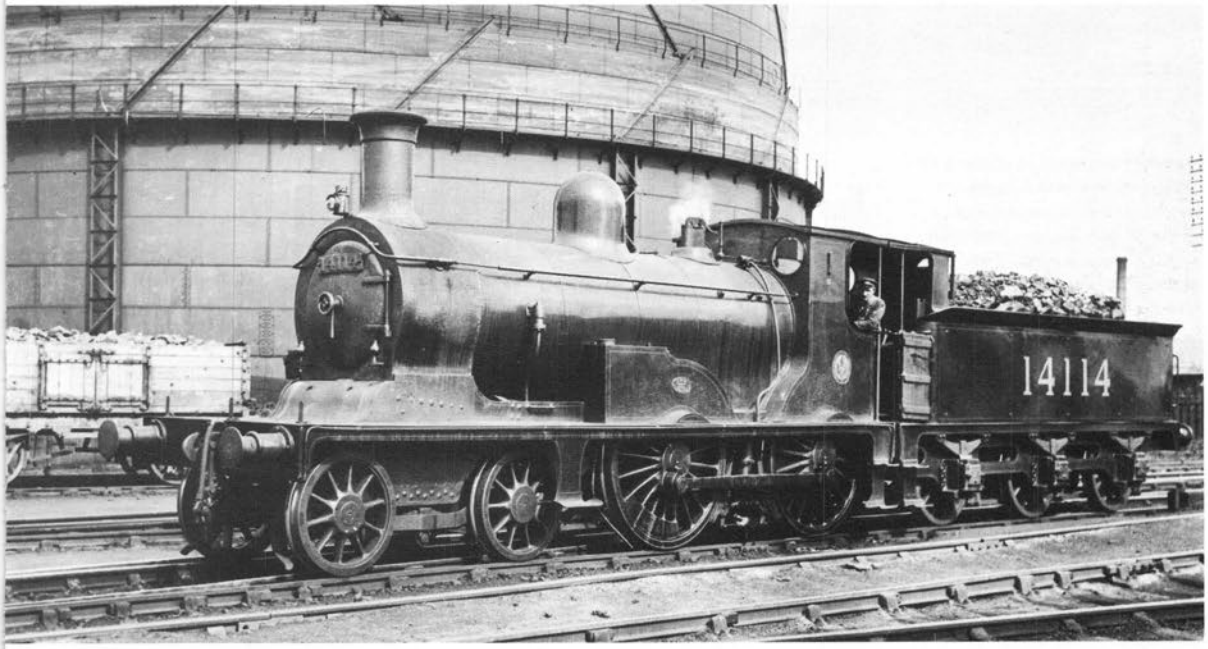
The second batch was ordered after Drummond's resignation and Smellie made several changes to the boiler, using a flat topped firebox instead of Drummond's eliptical shaped roof and revising the tube arrangement. He also used a higher boiler pressure, making the boilers of steel. This second batch spread the use of the class to Perth, Edinburgh and St Rollox sheds. Rebuilding took place in 1902-8; No 85 was fitted in 1905 with a larger diameter boiler, but the rest had the 'Rebuild Boiler' which was in two versions dating from 1898 and 1904, being a standard type used on several classes of both new engines and rebuilds.

The whole class except No 85 were renumbered as duplicates by the addition of 1000 in 1916-22; No 1115 became No 87 in 1917, reverting to 1115 in 1921. The engines were built as follows (LMSR numbers on the right):

Nos 80-2	St Rollox	1888	14108-10
Nos 85/6, 116	St Rollox	1888	
Nos 114/95-8	St Rollox	1891	14111-5
No 115	St Rollox	1891	

Only four ran with LMSR numbers, Nos 14110/3-5.
First of class withdrawn: 85 (6/1918)
Last of class withdrawn: 14109 (9/1930)
None preserved

Below: A lovely study of a 'Coast Bogie' in latterday LMSR crimson lake livery, at Stirling. No 14114 was built as CR '80' Class 4-4-0 No 97 at St Rollox in 1891. This picture shows the post-1900 boiler design and the tender has a 'Drummond-style' cab fitted.
T. G. Hepburn/Rail Archive Stephenson



SECTION 16

0-6-0ST CR Class 272; LMSR unclassified, later OF Shunting Tank Engines

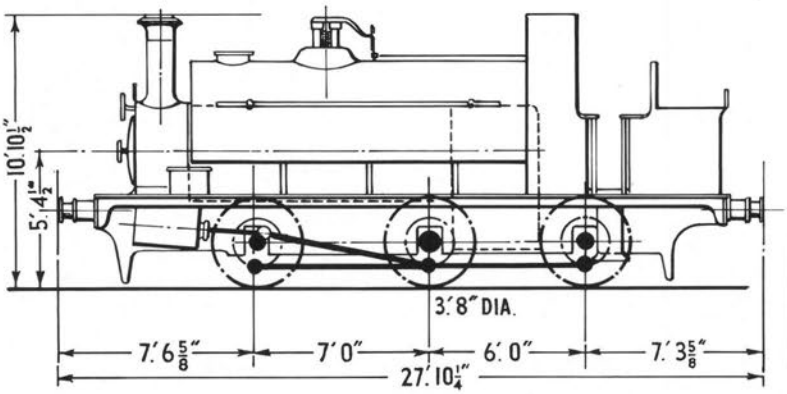
Introduced: 1888
Total: 6

This small class was something of a curiosity, being a six-coupled version of the '264' class 0-4-0ST. The front end of the engine was more or less the same, but the rear was extended with a Stirling pattern open cab and a bunker. The longer wheelbase restricted their usefulness and they were rather less useful than the more powerful 'Jubilee Pugs', so a return was made to the four coupled version when more dockyard shunters were needed in 1889-90. Originally fitted only with a handbrake they were later modified with steam brakes. They spent their working life in Glasgow, Edinburgh and Dundee. All were transferred to the duplicate list. The engines were built as follows (LMSR numbers on the right):

Nos 272, 508/27	St Rollox	1888	
Nos 273/4, 509	St Rollox	1888	16100-2

Only No 1273 ran with its LMS number.
First of class withdrawn: 1527 (12/1921)
Last of class withdrawn: 16100 (6/1929)
None preserved

Above: The neat lines of the '272' class 0-6-0ST with outside cylinders (a six-wheeled version of the 'Pugs'), are well displayed in this picture of No 272, the first of the class, introduced in 1888. Like the larger '385' class (see Section 14) they featured a curiously scanty cab, whereas at least the little 0-4-0ST (Section 12) offered the men *overhead* protection. A dark, wet, and blustery Scottish night shunting a yard with one of these locos defies the imagination! The CR drivers and firemen must have been a hardy bunch. *LPC*



Right: Outline drawing of the '272' class 0-6-0ST for shunting duties, introduced 1888.

Part Two: Dugald Drummond on the LSWR 1895–1912

Such was Dugald Drummond's status as a locomotive engineer that he was able to suceed to the post of Locomotive Superintendent of the LSWR when William Adams retired in 1895. In 1905 his title was changed to that of Chief Mechanical Engineer, being amongst the earliest of that rank in Britain. The effect of his arrival at Nine Elms was something more than that of a new broom, for he ripped wide open the quiet easy-going atmosphere very quickly, accepting retirements and resignations in plenty and sacking others, replacing them in many cases by his own ilk from north of the border. One of the most important of these latter was R. W. Urie, who was to succeed him. Perhaps more than ever he attained a reputation of ruthlessness, but fairly applied, for the South Western men would not have understood the harsh abruptness of the northerner, nor have the temperament to withstand it. Long after his death in 1912 he was recalled in terror by many, yet held in affection by others who had discovered the real man behind the dour Scots mask. He did in fact have a strong awareness of the need for the welfare and education of his staff, particularly encouraging them by a series of 'Lectures on the Locomotive' (later published as a book) and he also partook in the affairs of the Institution of Civil Engineers and engaged in military activities in the old Volunteer Movement.

It is of course for his locomotives that Drummond is remembered and he not only provided the LSWR with many fine engines but he also reorganised their repair by building a new works at Eastleigh, which opened in 1908, and which was to remain one of the best equipped in Britain. Despite his authority he did not always have his way with his directors; they objected to what seemed to be the livery of a rival company when his first express engine, No 720 of 1897, appeared in the Stroudley livery. They also prevented him from naming any South Western engines, as that practice had long been given up by the railway (a request to do so in 1904 was firmly rejected, possibly because it was just what the Brighton did!). Nor could he get the Caledonian style hooter accepted, having to substitute whistles on the two classes fitted ('M7' and '700') An exception was 'D15' class 4-4-0 No 463 which carried a hooter when new. This was replaced by an ordinary whistle during World War 2, but once again fitted after the war, and carried for the rest of her days. He modified the livery by changing the green used by Adams to an apple green, edged with chocolate, having an inner band of black, lined on each side by white; these colours were referred to by Drummond as tartan green, purple-brown and olympic black. At first he used only SWR as the identity but soon LSWR became the standard and he substituted smooth eliptical numberplates for the raised figure pattern used by Adams.

The classes built by Dugald Drummond for the South Western were in the majority for passenger or mixed traffic work because heavy goods traffic, such as he had to cater for in Scotland, did not exist in volume on the LSWR. Only one truly goods type, the 0-6-0 '700' class, was needed in his day. For shunting he continued the construction of the Adams designed 'G6' 0-6-0T, increasing their number from 10 to 30 by new construction in 1896-1900 and fitting his own version of Adam's boiler, and for lighter dock shunting he built five engines of the 'K14' class which were very similar to Adam's 'B4' class of 1891-3, but with sufficient differences to be regarded for many years as a separate class. Construction of the Adams 'T1' 0-4-4T and 'T6' and 'X6' 4-4-0 types was completed under Drummond in 1895-6.

While eminently successful with his four-coupled types Drummond failed to make his mark with six-coupled engines when the time came to build bigger and more powerful machines and in this he was not alone, for none of the Victorian locomotive engineers achieved great distinction when forced into the same position. In appearance they were clumsy when compared with the 4-4-0 types and all too often the latter bettered them in performance; it was no surprise that his final class, the 'D15' 4-4-0, was every bit as competent as the various six-coupled express engines were not. More than most railways the men of the South Western (and later the Southern) had a happy way of applying their own distinctive names to the various classes, so that there were the 'Greyhounds' ('T9'), the 'Large' and 'Small Hoppers' ('K10' and 'L11') which had started as 'Grasshoppers', the 'Paddleboxes' (4-6-0 classes) and for the very smallest, the 'Potato Cans' (C14) — even today the practice remains on the Southern Region and although the 'Tadpoles' (diesel-electric multiple-units) are being disbanded, we now have the

Table 2A

LSWR Locomotives

CLASS		M7		700		T7		E10
Condition		*As built*	*No 126*	*As built*	*S'heat*	*As built*	*Rebuilt*	*As built*
Cylinders	**in×in**	18½×26	19×26	18½×26	19×26	15×26	14×26	14×26
Bogie wheels	**ft-in**	—	—	—	—	3-7	3-7	3-7
Driving wheels	**ft-in**	5-7	5-7	5-1	5-1	6-7	6-7	6-7
Trailing wheels	**ft-in**	3-7	3-7	—	—	—	—	—
Heating surface:								
Large and small tubes	**sq ft**	1,068	860	1,068	860	1,307	1,392	1,344
Firebox water tubes	**sq ft**	—	—	—	—	215	195	190
Firebox	**sq ft**	124	117	124	117	142	173	156
Total evaporative	**sq ft**	1,192	977	1,192	977	1,664	1,760	1,690
Steam drier	**sq ft**	—	—	—	—	—	—	—
Superheater	**sq ft**	—	182†	—	182†	—	—	—
Combined heating surface	**sq ft**	1,192	1,159	1,192	1,159	1,664	1,760	1,690
Superheater elements	**No**	—	18	—	18	—	—	—
Grate area	**sq ft**	20¼	20¼	20¼	20¼	27½	27½	27½
Boiler pressure	**lb/sq in**	175*	170	175	180	175	175	175
Tractive effort (85% BP)	**lbs**	19,750	19,182	22,847	23,500	22,030	19,190	19,190
Coal (Tank locomotive)	**t**	3	3	—	—	—	—	—
Water (Tank locomotive)	**gal**	1,300	1,300	—	—	—	—	—
Weight (Engine only)	**t-c**	60-4*	62-18	42-15	46-14	54-11	60-1	58-14

LSWR Locomotives (continued)

CLASS		F13, E14		G14, P14		B4		T14
Condition		*As built*	*No 333 rebuilt*	*As built*	*No 449 S'heat*	*As built*	*Re-boilered*	*As built*
Cylinders	**in×in**	16×24**	16×24	15×26	15×26	16×22	16×22	15×26
Bogie wheels	**ft-in**	3-7	3-7	3-7	3-7	—	—	3-7
Driving wheels	**ft-in**	6-0	6-0	6-0	6-0	3-9¾	3-9¾	6-7
Trailing wheels	**ft-in**	—	—	—	—	—	—	—
Heating surface:								
Large and small tubes	**sq ft**	2,210	1,716	1,580	1,414	709	766	1,580
Firebox water tubes	**sq ft**	357	—	200	—	—	—	200
Firebox	**sq ft**	160	168	140	157	55	57	140
Total evaporative	**sq ft**	2,727	1,884	1,920	1,571	764	823	1,920
Steam drier	**sq ft**	—	—	NR	—	—	—	56*†
Superheater	**sq ft**	—	308	—	308	—	—	—
Combined heating surface	**sq ft**	2,727	2,190	1,920	1,879	764	824	1,920*†
Superheater elements	**No**	—	24	—	24	—	—	—
Grate area	**sq ft**	31½	31½	31½	31½	10¾	10¾	31½
Boiler pressure	**lb/sq in**	175	175	175	175	140	140	200
Tractive effort (85% BP)	**lbs**	25,387	25,387	24,192	24,192	14,600	14,600	25,177
Coal (Tank locomotive)	**t**	—	—	—	—	½	½	—
Water (Tank locomotive)	**gal**	—	—	—	—	600	600	—
Weight (Engine only)	**t-c**	76-13**	73-18	70-19*‡	72-19	32-18	33-9	74-10

*M7 bp 150lb/sq in (later restored to 175lb/sq in)

†Maunsell superheater (Eastleigh types M7, 700 167sq ft; T9, S11, L12 195sq ft; T14 269 sq ft; D15 231sq ft — total heating surfaces correspondingly less)

C8	T9		F9	K10	L11	S11		L12	
As built	*As built*	*S'heat*	*As built*	*As built*	*As built*	*As built*	*S'heat*	*As built*	*S'heat*
18½×26	18½×26	19×26	11½×18	18½×26	18½×26	19×26	19×26	19×26	19×26
3-7	3-7	3-7	2-6	3-7	3-7	3-7	3-7	3-7	3-7
6-7	6-7	6-7	5-7	5-7	5-7	6-1	6-1	6-7	6-7
—	—	—	2-6	—	—	—	—	—	—
1,068	1,186	921	500	1,068	1,187	1,222	993	1,222	993
—	(165)	—	—	100	165	165	—	165	—
124	148	142	50	124	148	163	161	163	161
1,192	1,334‡	1,063	550	1,292	1,500	1,550	1,154	1,550	1,154
—	—	—	—	—	—	—	—	—	—
—	—	213†	—	—	—	—	213†	—	213†
1,192	1,334‡	1,276	550	1,292	1,500	1,550	1,367	1,550	1,367
—	—	21	—	—	—	—	21	—	21
20¼	24	24	11¼	20¼	24	24	24	24	24
175	175	175	175	175	175	175	175	175	175
16,755	16,755	17,678	5,285	19,756	19,756	19,400	19,400	17,673	17,673
—	—	—	1	—	—	—	—	—	—
—	—	—	1,000	—	—	—	—	—	—
46-16	48-17	51-16	37-8	46-14	51-1	52-0	53-15	53-19	55-4

D15			K11		H12	H13	C14		S14
S'heat	*As built*	*S'heat*	*As built*	*Re-boilered*	*As built*	*As built*	*As built*	*0-4-0T*	*As built*
15×26	19½×26	19½×26	7×10	7½×10	9×14	10×14	10×14	14×14‡	12×18
3-7	3-7	3-7	—	—	—	—	—	—	—
6-7	6-7	6-7	2-9	2-9	3-0	3-0	3-0	3-0	3-8
—	—	—	—	—	—	—	—	—	—
1,280	1,406	1,140	56	94	152	152	379	379	521
—	170	—	41	119	119	119	119	—	—
158	148	145	32	76	76	76	73	69	82
1,438	1,724	1,285	129	289	347	347	571	448	603
—	NR	—	—	—	—	—	—	—	—
295†	—	252†	—	—	—	—	—	—	—
1,731	1,724	1,537	129	289	347	347	571	448	603
21	—	21	—	—	—	—	—	—	—
31½	27	27	5	6¾	6¾	6¾	9½	9½	10½
175	200	180	150	150	150	175	150	150	175
22,030	22,333	20,100	1,893	2,173	4,016	5,785	9,958	9,720	8,763
—	—	—	¼	¼	¾	1	1	1	1
—	—	—	170	170	530	485	550	550	600
75-15	59-15	61-11	23-3	25-7	31-11	32-6	24-0	25-15	28-2

‡Cyls 14in×14in, Nos 741/3/4

**'E14' 16½in dia cylinders; wt 74-0

*‡'P14' 74-13

*†Nos 447/58-62 only (total hs 1,976sq ft)

Table 2B

LSWR Tenders

Coal	**t**	4	4	5	5	4	5	5
Water	**gal**	3,500	3,500	4,000	4,300	4,500	4,600	5,800
Feed water heating surface	**sq ft**	—	—	382*	236	382	—	—
Weight	**t-c**	36-14	40-16	44-17	48-18	49-0	47-10	60-8
No of wheels		6	6	8	8	8	8	8
Classes using each type		700, D15	C8, L11, K10, T9, L12	C8, T9, K10, S11* L12*, L11, F13*, E14*, T7	E14, T7	D15, L11, P14, G14, T14	E10	T14

*donotes tenders fitted with feedwater heating

'Glasshouses' (diesel mechanicals) running between Reading and Gatwick or Tonbridge!

To Drummond there lies the credit for introducing (or rather reintroducing, after a long period since earlier attempts had been made) steam railcars and push pull trains; it was however another area in which he failed to provide successful machines. In practice the steam railcars and miniature locomotives were quite insufficient for the work and so he resorted to adapting the much bigger 0-4-4T engines of his 'M7' and Adam's '02' classes for push and pull work, fitting them with wires and pulleys for mechanical control from the remote driving compartment (the Southern substituted an air pressure control system).

Having turned to simple, robust designs in Scotland, after discarding so many Stroudley devices, he was able to indulge himself on the LSWR to the full. There was a tradition of experimentation and patents for feed water heating devices, which the company had embarked upon during Joseph Hamilton Beattie's regime, not so many years before, and no doubt the directors were receptive to the argument that Drummond could improve and produce these more cheaply, with up to date and simpler techniques. So he used an exhaust steam heat exchanges to preheat the feedwater placed below the tender (or in the case of the 'M7' class inside the side tanks) which meant that pumps had to be used instead of injectors and he fitted many fireboxes with cross water tubes which not only increased the heating surface but were also intended to promote better water circulation. Drummond was not of the opinion that superheating had anything to offer, and he went no further than to introduce a 'steam drier' which in fact did no more than add a negligible 20°F superheat. Later, Urie had other ideas about these gadgets and discarded them at the earliest opportunity, particularly the steam driers, feed water heaters and pumps, although it took him rather longer to rebuild the fireboxes. It was Urie's practice to add superheaters, but it was well into the Southern era before all the engines selected were altered. Another Drummond practice which was discarded by Urie as quickly as possible, was the fitting of the feedwater clacks at the bottom of the smokebox tubeplate below the barrel with extension pipes into the barrel itself, (done to avoid openings into the shell, in obedience to Stroudley's dictum about minimising the number of holes in the boiler). Yet another Drummond device was a spark arrester which in its original form needed extra space within the smokebox, making it at first necessary to adopt prominent conical doors, although a simpler version soon rendered these unnecessary. The absence of balance weights in the coupled wheels of some classes will be noted, the engines concerned having Drummond's patent balanced crank axle in which the webs were extended to obtain the required balancing forces for the coupling rods and motion.

Hallmarks of the Drummond outline were his development of the Stroudley cab with its ribbed roof, and the practice of placing the safety valves on top of the dome (again to avoid extra holes in the boiler shell), except on his 4-6-0 classes where the height of the boiler made a small dome necessary and he was then forced to accept safety valves placed over the firebox. In another field, Drummond experimented with a form of electric track warning system, fitting up 0-4-4T 'M7' class

No 481 in 1911, but trials were far from satisfactory and were soon abandoned.

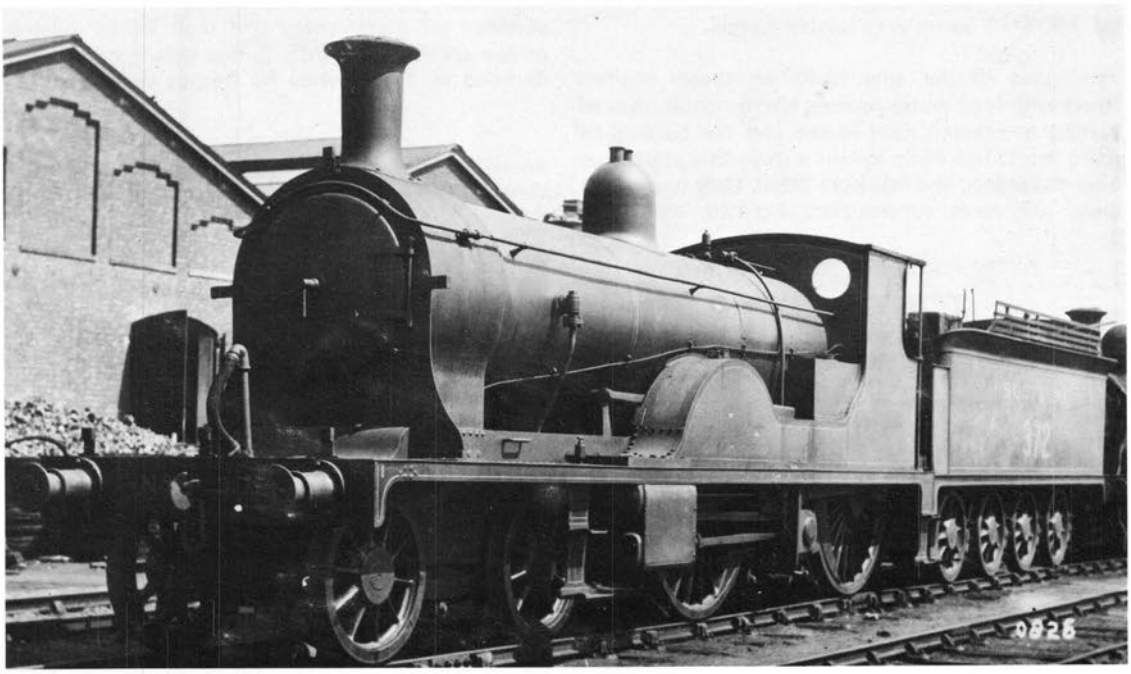
Drummond's duties included the day to day running of the locomotives and he soon enforced new standards, so that the South Western men became hard runners, not only flying headlong down the banks, but tackling the uphill sections with a new gusto. Indeed to the very end of steam it was noticeable that the Southern Region's South Western Division drivers were fast runners, with smart braking, whose standards of performance made the men of many other areas, particularly Scotland, positively pedestrian by comparison! In exercising his authority Drummond made many journeys over the system, to conduct personal inspection, and for this he used his own small train, in the form of 'The Bug', in which he was apt to turn up when least expected or welcome and woe betide those who offended him by the manner of their workmanship, be it enginemenship, maintenance or discipline.

Just as he had achieved in Scotland, so Drummond once again set-to and reorganised the South Western's locomotive maintenance facilities. Room for expansion at Nine Elms in London was simply not available, and therefore a completely new works was built at Eastleigh, where a new carriage and wagon works, together with a new engine shed for the Southampton area, had been built a few years earlier. All activities ceased at Nine Elms at the end of 1909; the last new engine to be built there was 'K14' class No 84 of June 1908. It was not until September 1910 that Eastleigh's first engine was completed, 'S14' class No 101.

A total of 381 locomotives and 17 steam railcars were built to Drummond's designs on the LSWR, to which may be added 20 Adams 'G6' 0-6-0T, which were ordered during his time. Remarkable miscellaneous additions to the South Western's fleet during his superintendency were a pair of Stroudley LBSCR 'Terriers' (0-6-0T 'A1' class), which were purchased for use on the Lyme Regis branch in 1903, being numbered 734 and 735. Drummond evidently recalled their excellence!

The end of life came unexpectedly for Dugald Drummond. At the age of 72, and not showing any inclination to retire, he suffered from a scalding of his feet which turned to gangrene, enforcing amputation. He survived this for only a day, and died at his Surbiton home on 8 November 1912. Buried at Brookwood, beside the South Western main line, a railwaymen's rumour has it that 'half a ton of brake blocks' were used to ensure that he permanently rests!

Below: Nearing the end of her days — all were withdrawn by April 1927 — Class E10 4-2-2-0 No E372 is seen in SR green livery (see p64). *LPC*



SECTION 17

0-4-4T LSWR and SR Class M7 (Power class K); BR 2P Passenger Tank Engines

Introduced: 1897
Total: 105

The first Drummond class for the South Western was a new version of the NBR '157' class of 1877, with of course the trailing bogie. Various changes were made during the period of construction, which was spread over 1897-1911, with the result that there were five major versions as follows:

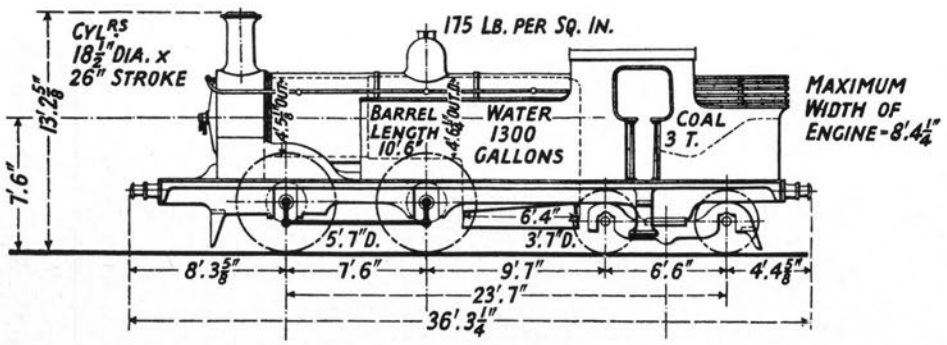
(a) 1897-9 short overhang at the front end, sandboxes combined with the front splashers, injectors, lever reverse and conical smokebox doors on Nos 252-56,
(b) 1900 as (a) but the sandboxes were placed inside the smokebox,
(c) 1903 long front overhang, steam reverse, injectors, smokebox, sandboxes,
(d) 1904-5 long front overhang, steam reverse, feed water heating and single ram pumps, balanced crank axles and sandboxes combined with the leading splasher,
(e) 1905-11 as (d) with duplex pumps.

The sides of the side tanks on those engines fitted with feed water heating had an outer layer of plating to prevent heat losses and the burning of paint work, but early in Urie's days this apparatus was discarded, and injectors fitted. Only one of the class was ever superheated, No 126, altered in 1921. For this the boiler was placed higher in the frames and other changes were an extended smokebox and a Urie style stovepipe chimney. As converted, No 126 proved to be successful and also more economical, and it was planned to alter a further 19, but a problem proved to be the increased weight, which severely restricted its usefulness, so the plan was dropped.

When push and pull working became a feature of LSWR branch line working many of the class were fitted up with the clumsy cable and pulley system of control, starting in 1912. However when the Southern Railway adopted the LBSCR compressed air system, 36 were converted in 1930-7, it being necessary to confine them to the engines with long fronts because of the extra room needed for the compressor. As late as 1960-2 a further four appeared; three in fact being the result of changed identities, when frames were exchanged during overhaul at Eastleigh works.

When new, Dugald Drummond put several to work on express passenger trains between Exeter and Plymouth, including the fastest duties, but they had to be taken off such work after a serious derailment at Tavistock. However they were most useful on local main line and branch trains as well as London surburban traffic, in due course being displaced from the latter by electrification. After 1923 their use elsewhere on the Southern Railway was limited, and not always successful. The solitary superheater engine was confined to Windsor line services for many years and then joined several others on Waterloo ECS duties before being condemned in 1937 when its frames were used to

Below: Outline drawing of the long framed version of the Class M7 0-4-4T; first introduced in 1897, for local passenger duties.

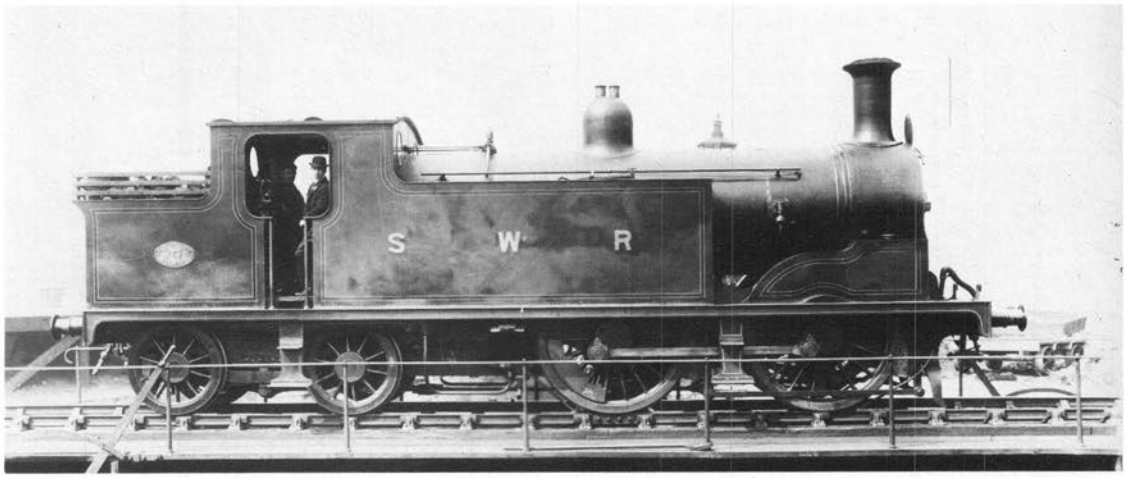


repair No 254 (so turning that engine into a long framed version); in reality it was the latter that was scrapped and the former renumbered! No 672 met an unfortunate and premature end in 1948 when it fell down the lift shaft giving access to the Waterloo City Underground line and had to be cut-up in situ. All but the two just mentioned ran with BR numbers, and general withdrawal commenced in 1957. The engines were built as follows:

Nos 242-56, 667-76	Nine Elms	1897
Nos 31-40	Nine Elms	1898
Nos 22-6, 41-4, 241	Nine Elms	1899
Nos 112, 318-24/56/7	Nine Elms	1900
Nos 123/4/30/2/3, 374-8	Nine Elms	1903
Nos 21/7-9, 30, 108-11, 379	Nine Elms	1904
Nos 104-7, 45-55	Nine Elms	1905
Nos 56-60	Nine Elms	1906
Nos 125-9/31, 328, 479-81	Eastleigh	1911

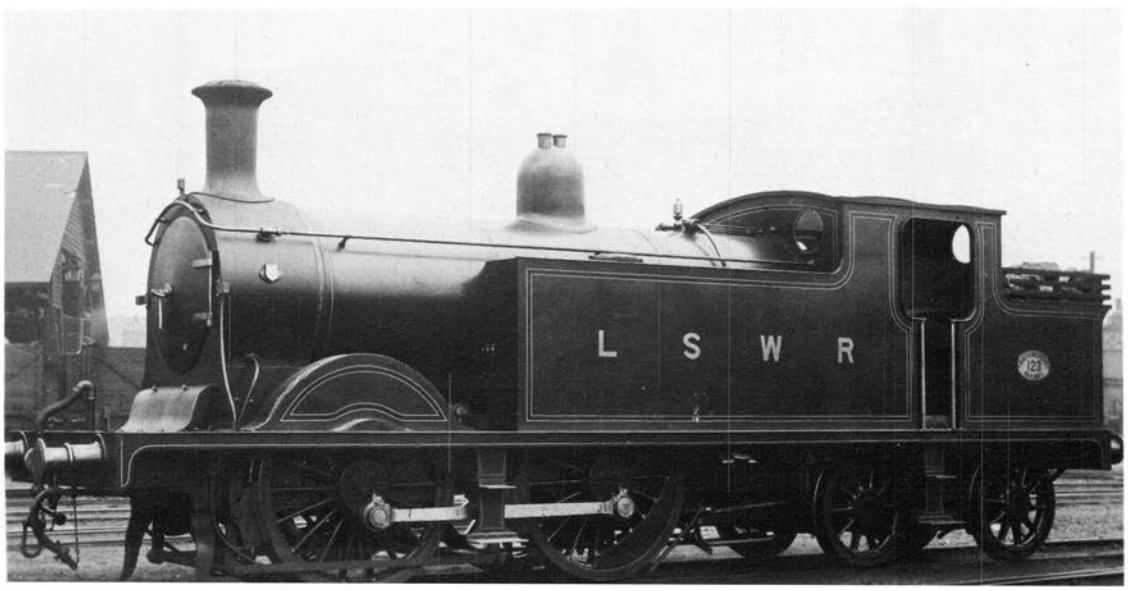
The engines fitted with duplex pumps were Nos 51-60, 125-9/31, 328, 479-81.

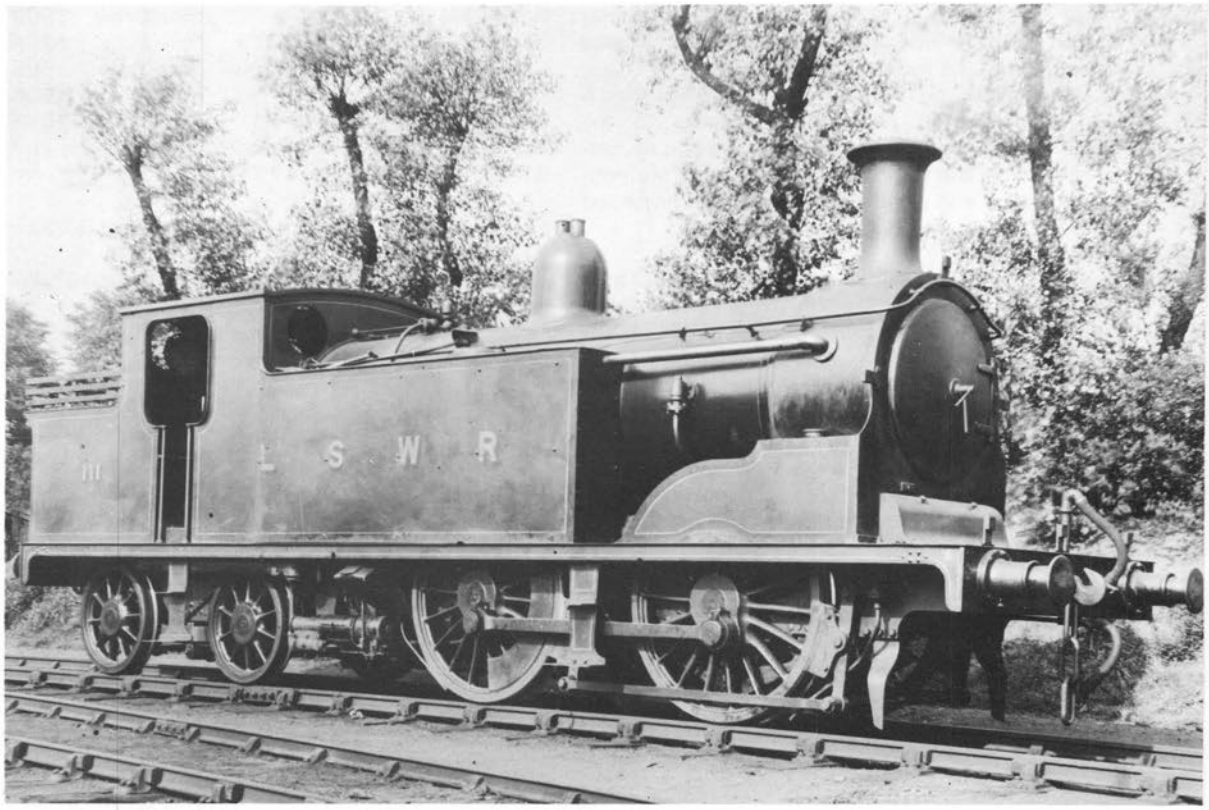
First of class withdrawn: 126 (superheater) 5/1937; 672 (5/1948)
Last of class withdrawn: 30025/9/52/3, 30107/8, 30254, 30480, 30667 (5/1964)
Examples preserved: 53 (Steamtown USA), 245 (National Railway Museum, York)



Above: In Dugald Drummond's first style of livery and lettering for the LSWR, grass green with plain chocolate border and white lining edged with black, Class M7 0-4-4T No 247 is seen here. This was one of the first batch built, in 1897 with short front overhang, and sandboxes combined with the leading splashers. *LPC*

Below: Class M7 0-4-4T No 123, of the 1903 batch, constructed at Nine Elms, with long front overhang and sandboxes inside smokebox. Photographed on 22 December 1917. *Ian Allan Library*



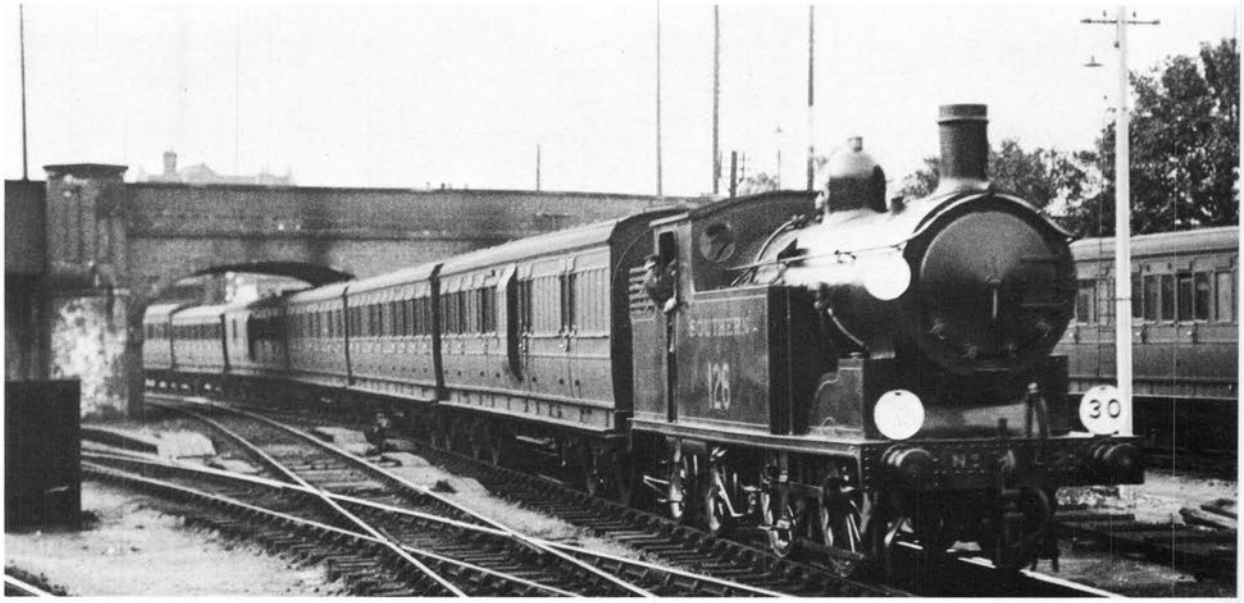


Above: In latterday LSWR livery, with painted numerals on the bunkerside instead of a brass plate, No 111, built at Nine Elms in 1904, and one of the batch with long front overhang and sandboxes combined with the splashers, is seen here. *LPC*

Below: The last Class M7 0-4-4T to be built, at Eastleigh in 1911, No 481, is depicted with the cable and pulley system of control for push and pull working; note brackets upon the cab roof. The carriage attached bears the set number 2B on the end. No 481 was one of the engines fitted with Duplex pumps. *Ian Allan Library*

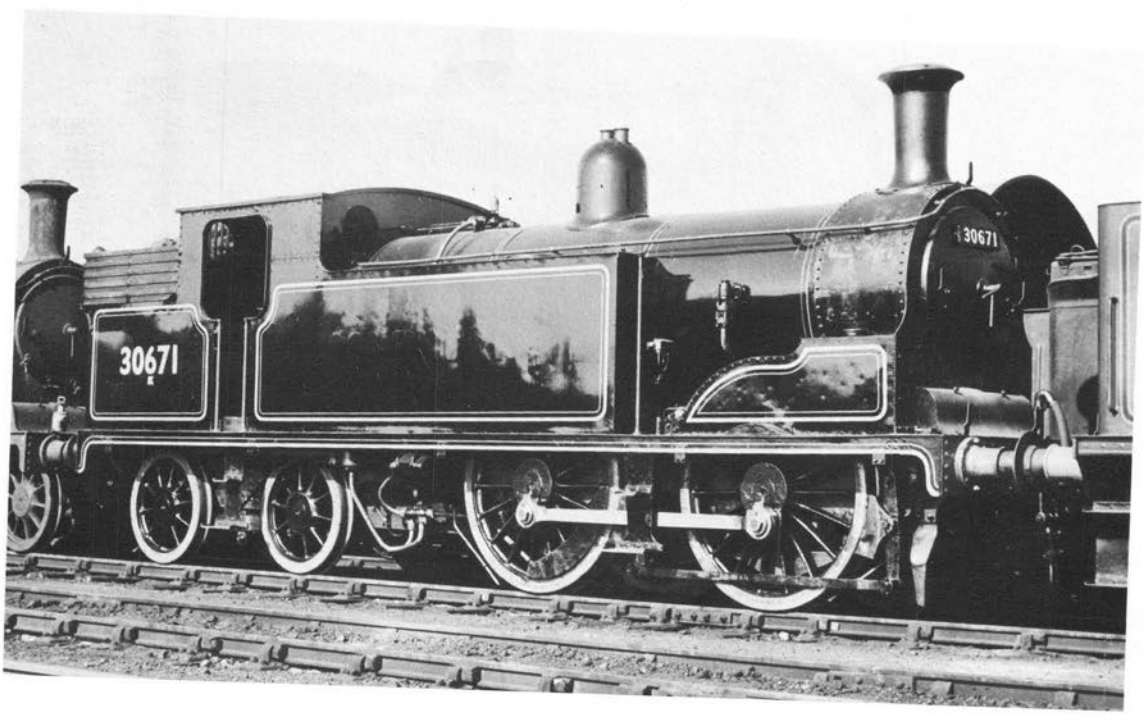
Below: The solitary superheated rebuild, by Urie in 1921, Class M7 0-4-4T No E126 was easily recognised by the higher-pitched boiler, extended smokebox and stovepipe chimney with capuchon. Although successful, it was somewhat heavy and thus had restricted route availability. No E126 is seen here at Guildford on 24 May 1926. *H. C. Casserley*

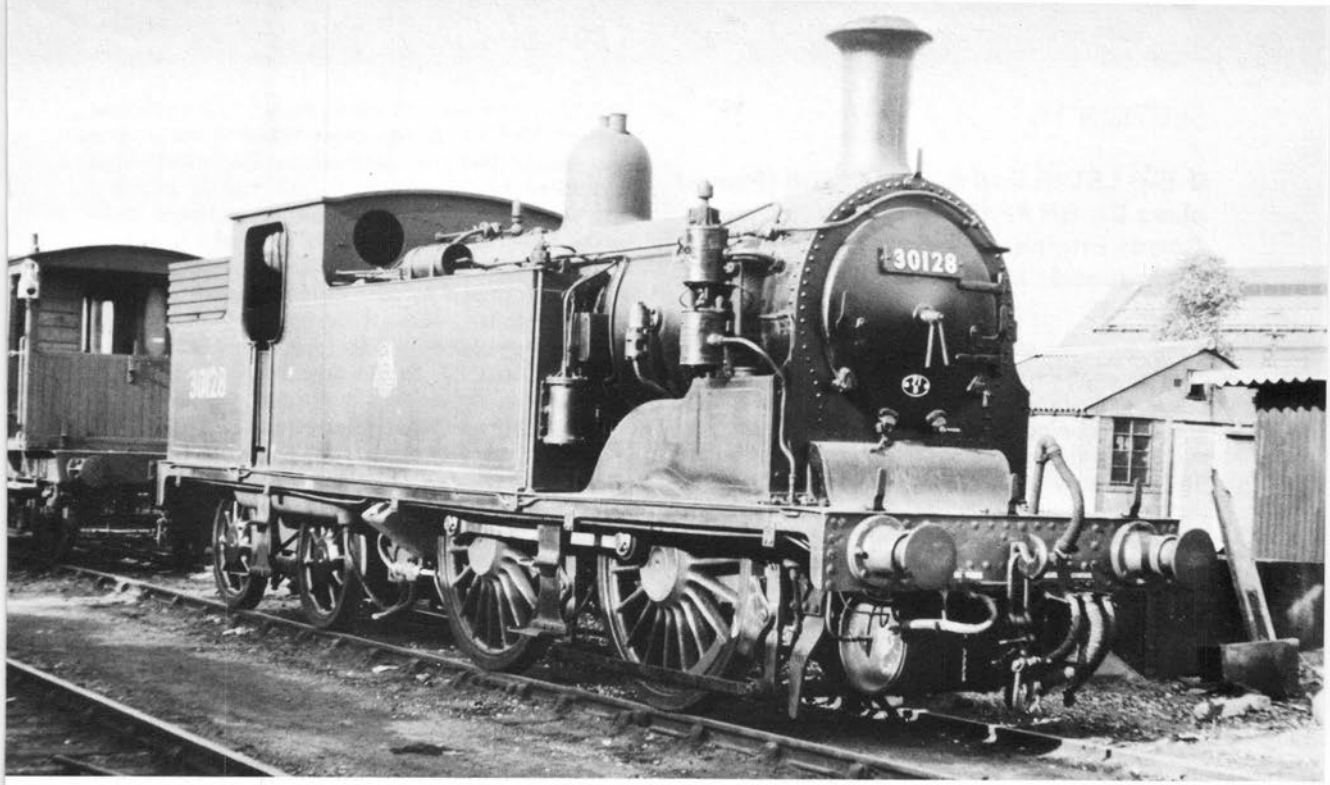
Bottom: The standard dark green livery of the Maunsell era suited the Drummond engines well, and Class M7 0-4-4T No 357 makes a classic picture in this garb when photographed at Waterloo in the mid-1930s. Note the sandboxes relocated below the running plate immediately behind the front bufferbeam. No 357 was one of the 1900-built batch which originally had the sandboxes located in the smokebox, together with the short front overhang. *A. B. MacLeod*

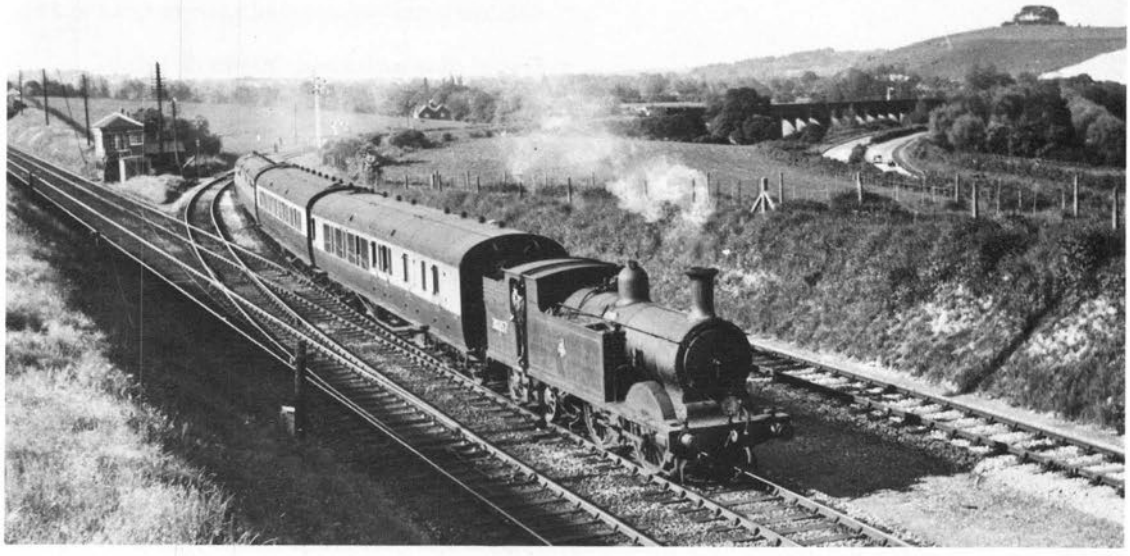


Above: In the brief postwar period leading-up to the nationalisation, one or two of the Class M7s received Bulleid's malachite green livery, with yellow lining edged with black. At least two more were so painted *after* nationalisation (Nos 30038/244) for use on the Waterloo-Clapham Junction empty coaching stock duties. These malachite green engines had the legend 'British Railways' hand-painted in yellow Gill Sans lettering with a fine black outline, on the tanksides. No 30244 is seen here at Waterloo *circa* 1949.
Ian Allan Library

Below: One cannot help wondering what Dugald's reaction would have been if he had been alive to witness Eastleigh painting his engines in LNWR-style lined-black livery! When freshly applied, as seen here on No 30671 photographed on 21 August 1949, it looked quite smart, but it soon dirtied down. When this particular locomotive was repainted in the BR mixed traffic livery (based upon the LNWR style) Eastleigh had no transfers for the 'lion-and-wheel' emblem and so the 'M7' went into the traffic without evidence of its new owners.
W. Gilbert







Top: Class M7 0-4-4T No 30128 fitted with the later (LBSCR style) form of push and pull train control gear, using compressed air. *P. J. Sharpe*

Above: The Drummond 'M7s' worked hard throughout their relatively long existence in LSWR, SR and BR ownership and must have earned their keep many times over. A typical latterday scene is this one, showing No 30357 hauling four WR corridor coaches, at Shawford Junction near Winchester on 2 June 1951. The train is the 3.35pm from Didcot to Southampton Terminus, via Newbury and Winchester (Chesil). The 'M7' worked forward from Winchester (Chesil) after taking over from a WR engine there. *P. M. Alexander*

SECTION 18

0-6-0 LSWR and SR Class 700 (Power class C); BR 4F (later 3F) Goods Engines

Introduced: 1897
Total: 30

The 30 engines of this class were the only 0-6-0 goods engines built for the LSWR between 1877 and the Grouping; such was the limited demand for such locomotives. Despite being delivered as Nos 687-716 they were officially known as the '700' class and unofficially as the 'Black Motors', although just why remains quite unexplained. The company found it necessary to order the engines from Dubs and in fact they had been authorised before Drummond's arrival, and somewhat naturally he substituted his own design for the original specification.

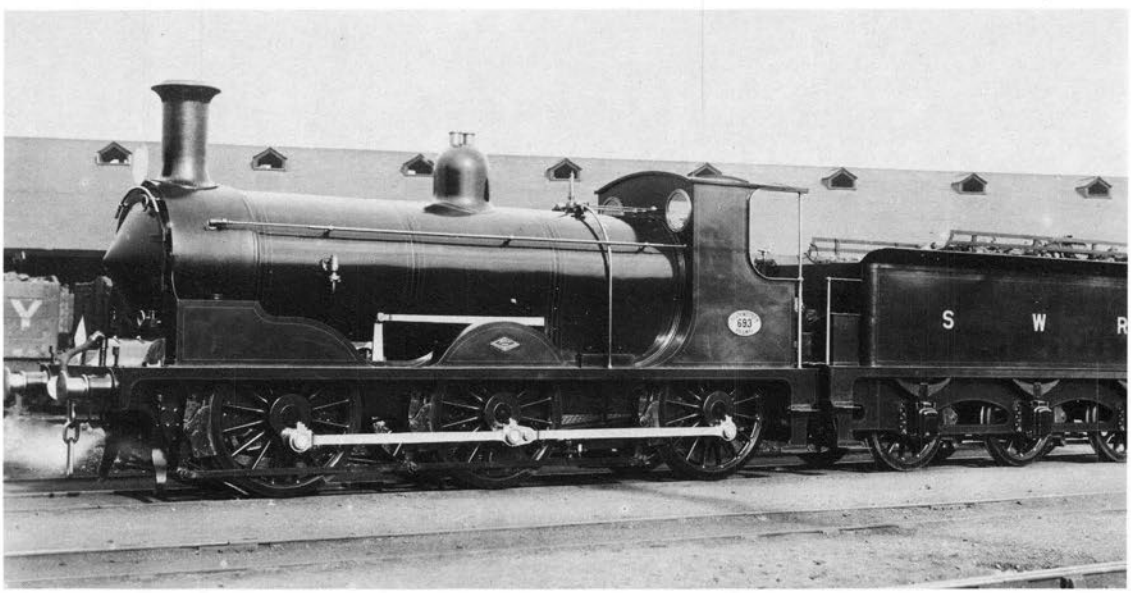
As built the 'Black Motors' were based on Dugald Drummond's earlier designs for the NBR and CR and were just as straightforward and robust, being to a large extent a goods version of the 'M7' class with identical boilers, cylinders and motion. Vacuum brakes were fitted to the engine and tender and the Stephenson link motion was controlled by lever reverse. All had Drummond spark-arrestors and the conical smokebox door when new. In 1921 No 316 was rebuilt with a superheated boiler of the original size, its centre line being raised by 9in; cylinders were enlarged and the boiler pressure raised by 5lb/sq in. An extended smokebox made it necessary to lengthen the front end by 1ft 6in and with a stove pipe chimney the appearance was substantially altered. The rest of the class were rebuilt in 1922-9.

At first these engines were often used on work other than goods traffic, proving to be useful for special passenger and excursion trains, but gradually as more mixed traffic classes became available more of their time was spent on goods traffic, and they were then seen all over the South Western. Even in Southern Railway days the class was little used elsewhere. All survived to be renumbered by British Railways, and the first withdrawal was caused by a collision between No 30688 and an electric train at Staines.

The engines were built by Dubs in 1897 as Nos 687-716 but in 1898 Nos 702-16 were renumbered 306/8/9/15/7/25-7/39/46/50/2/5/68 and 459, the latter being altered again in 1912 to 316.

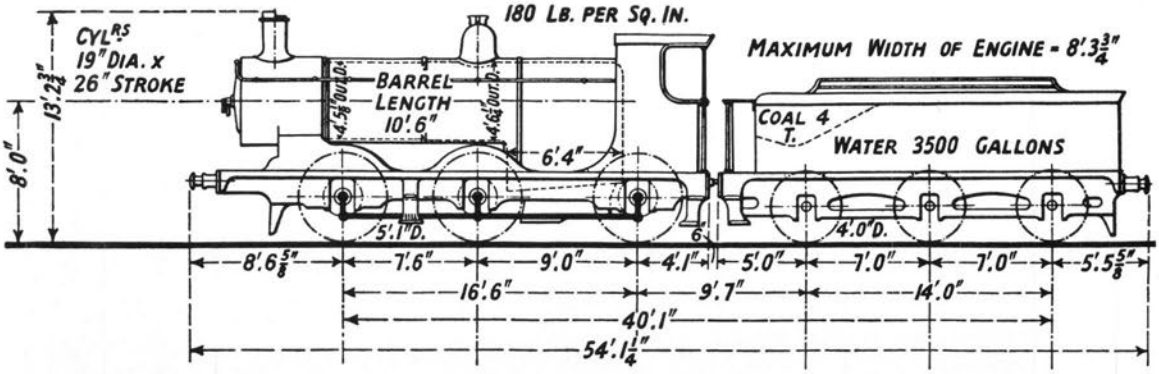
First of class withdrawn: 30688 (9/1957)
Last of class withdrawn: 30309/15/6/25/68, 30690/5 (12/1962)
None preserved

Below: Wearing Drummond's early goods engine livery, with SWR on the tender, '700' class 0-6-0 No 693 also displays the original conical smokebox door fitted. The boiler, cylinders and motion were identical with the Class M7s *LPC*



Above: With more orthodox style smokebox door, and with the Drummond 'hooter' replaced by a conventional whistle, Class 700 No E699 is seen in prewar SR goods black livery, with fine green lining. *LPC*

Below: Urie's superheated rebuilding of the '700' class, commencing with No 316 in 1921, gave a new look to the front end, with the extended smokebox and stovepipe chimney. It also gave the engines a new lease of life and they were much valued by the SR enginemen on the Western Section. No 699 is seen at Eastleigh works in August 1947, in a fresh coat of plain black, with the SR Bulleid 'sunshine' lettering and numerals, which were in golden yellow with malachite green shading, (first introduced in 1941). *Frank F. Moss*

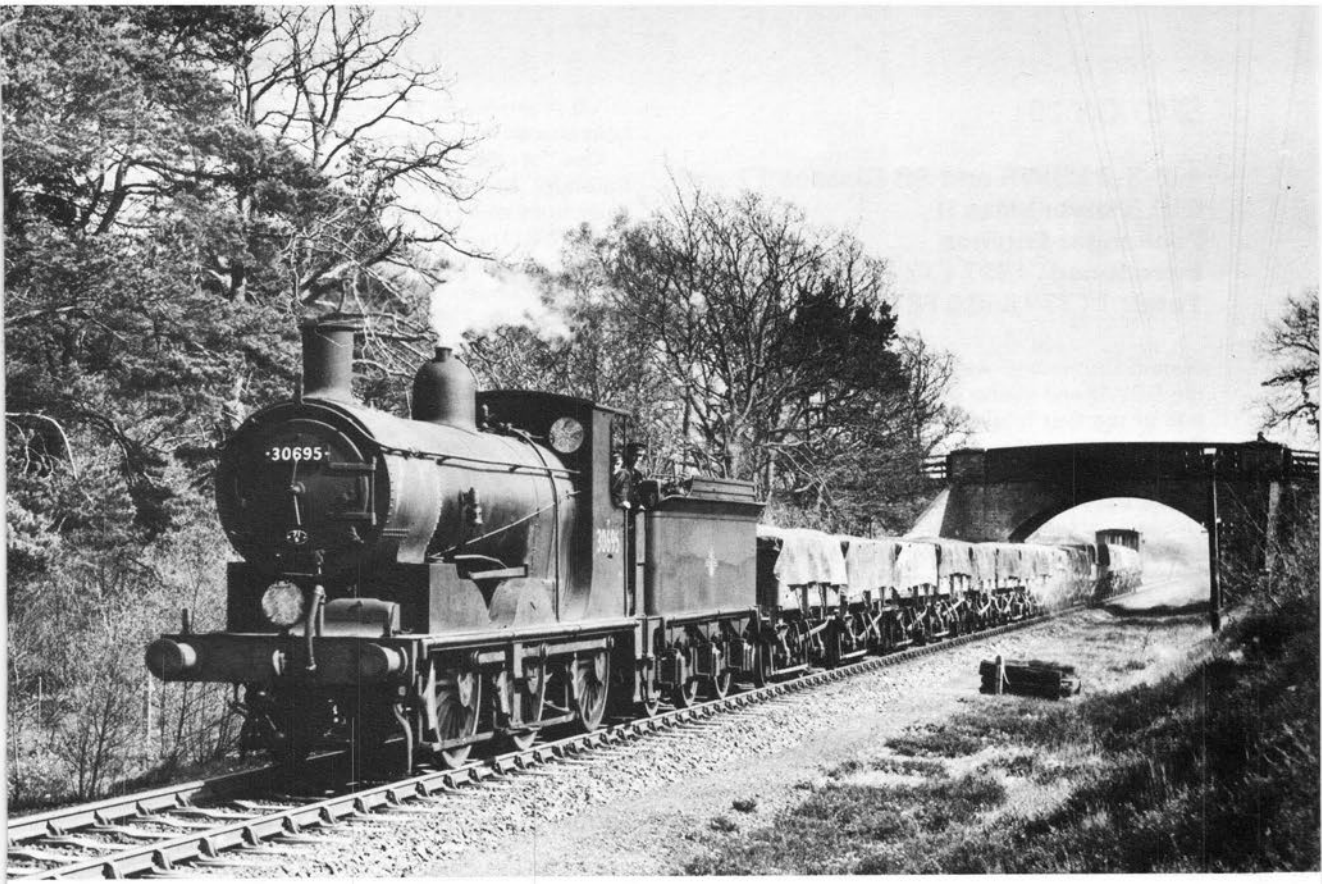


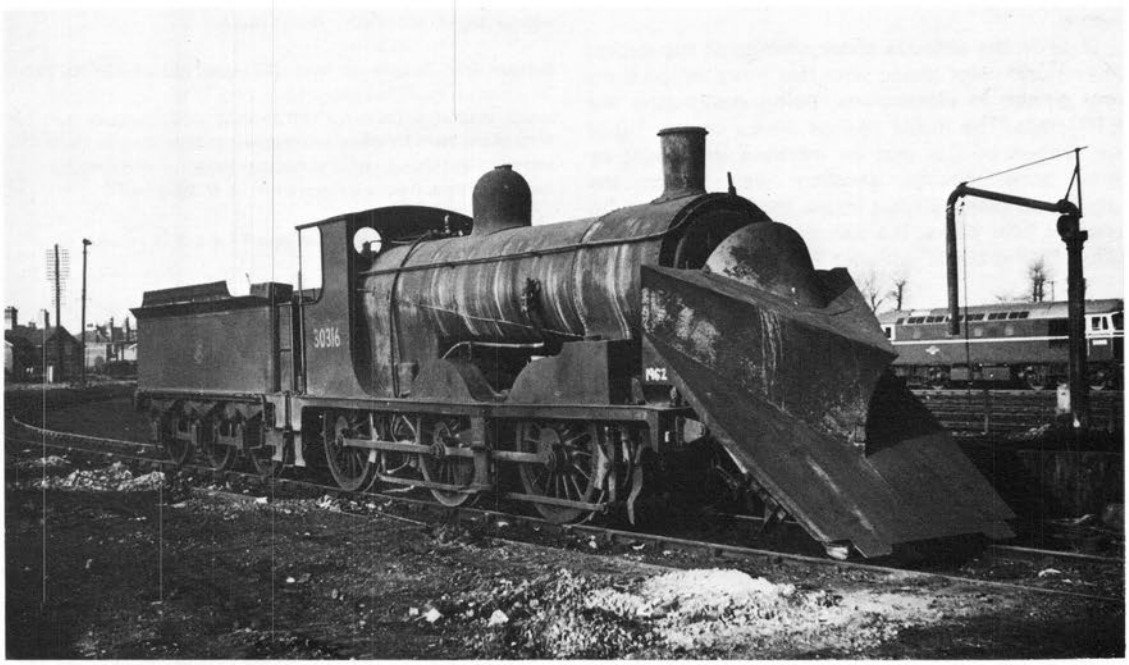
Top: '700' class 0-6-0 No 30697, in plain black BR livery, is seen here passing Surbiton on 11 September 1954. The empty stock the engine is hauling from Esher to Waterloo includes a former GCR coach (leading) and some carmine red and cream LMR examples. *J. N. Faulkner*

Above: Outline drawing of the superheated version of the '700' class 0-6-0, as rebuilt by Urie 1921-1929.

Top right: A very characteristic portrayal of a '700' class 0-6-0, and one which could be seen well into BR days. Goods traffic was their true forté, and they were surprisingly strong engines, denying their true age. No 30695 is seen trundling along with a load of sheeted mineral open wagons at Worgret Junction. *D. M. C. Hepburne-Scott/Rail Archive Stephenson*

Right: A final use for a useful class. No 30316 is seen at Eastleigh on 24 February 1963 attached to a snowplough, and looking rather the worse for wear. *W. G. Sumner*


30695


30316

4-2-2-0 LSWR and SR Classes T7 and E10 (Power class I)

Passenger Engines

Introduced: 1897 ('T7') and 1901 ('E10')

Total: 1 ('T7') and 5 ('E10')

Dugald Drummond was just beaten by Manson of the GSWR and Webb of the LNWR to the production of the first four-cylinder locomotive in Britain; Drummond's engine, No 720, was a double single with uncoupled driving wheels and was thus unlike either Manson's or Webb's engines. Using high pressure steam, the inside cylinders drove the leading drivers and the outside pair the trailers, with Stephenson link motion for the former and Joy's for the latter with valves below. This was the first engine to have water tubes in the firebox but there were no external access covers as on succeeding engines with such fireboxes. The boiler was too small for the four 16½in diameter cylinders and as a result they were immediately lined up to 15in, but the engine remained an indifferent performer, spending a great deal of time under repair. Even fitting smaller cylinders of 14in diameter did not help and so in 1905 a larger boiler was fitted, but even this provided no benefit and there was just about as much time spent under repair as before.

Despite the obvious shortcomings of the design Drummond went ahead with five more which were very similar in dimensions, being designated the 'E10' class. The major change was a shortening of the firebox by 2in and an increase in weight by three tons. Steam sanding was fitted, the sandboxes being placed inside the smokebox with external filler pipes, the sandpipes delivering sand between the bogie wheels! Their appearance was much improved by the wider cab, and No 720 was later altered from its original narrow style.

Use of the double-singles was confined to Salisbury, Bournemouth and Portsmouth services, apart from some use on goods trains to Weymouth in 1917-8. They were never in any way popular and everyone must have been greatly relieved when all six were condemned in 1926-7. All were built at Nine Elms, No 720 ('T7') in 1897 and Nos 369-73 ('E10') in 1901.

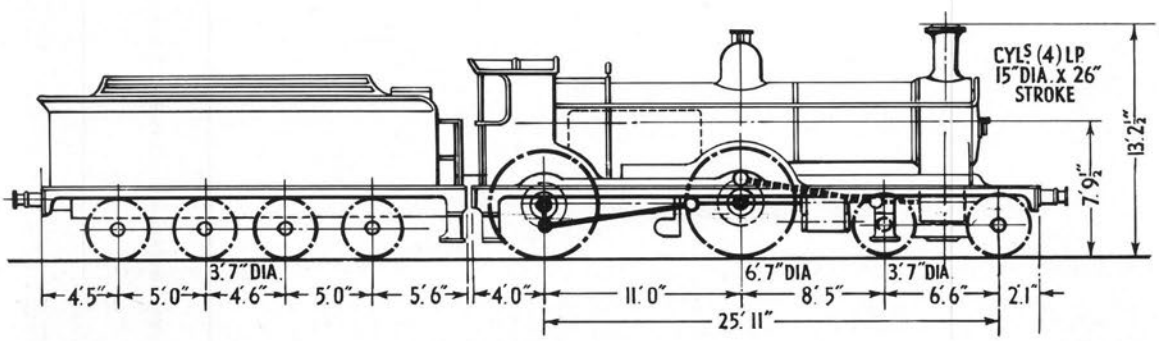
First of class withdrawn: 'T7' 720 (4/1927); 'E10' 369-71 (9/1926)
Last of class withdrawn: 'E10' 372/3 (4/1927)
None preserved

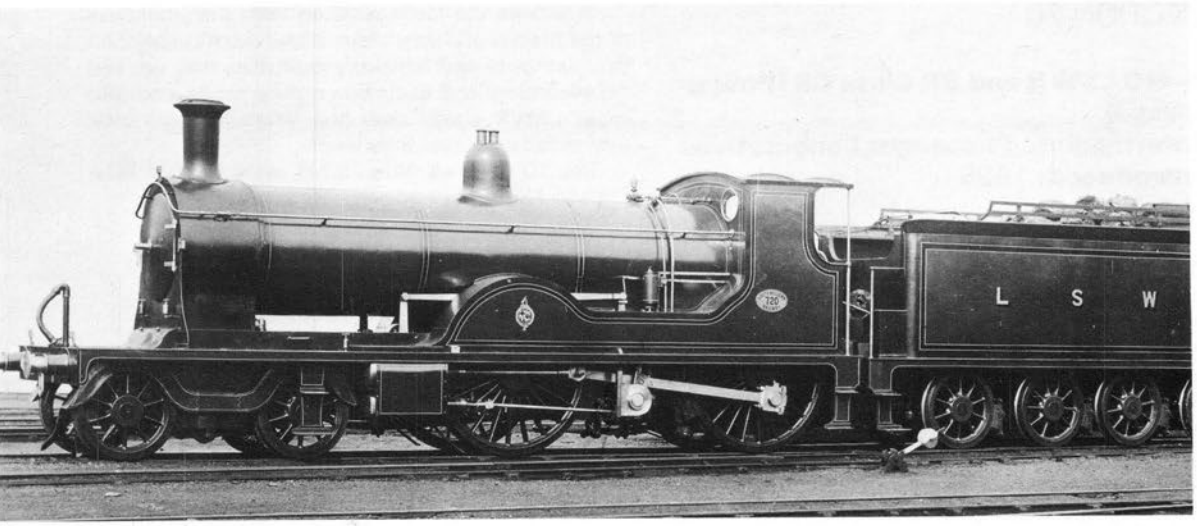
Top right: Curiously elegant and certainly unorthodox: Dugald Drummond's first four-cylinder 4-2-2-0, No 720, introduced in 1897. The slender grace of the front end of the engine is completely dwarfed by the eight-wheeled 'Water Cart' tender! The boiler proved to be too small. *Ian Allan Library*

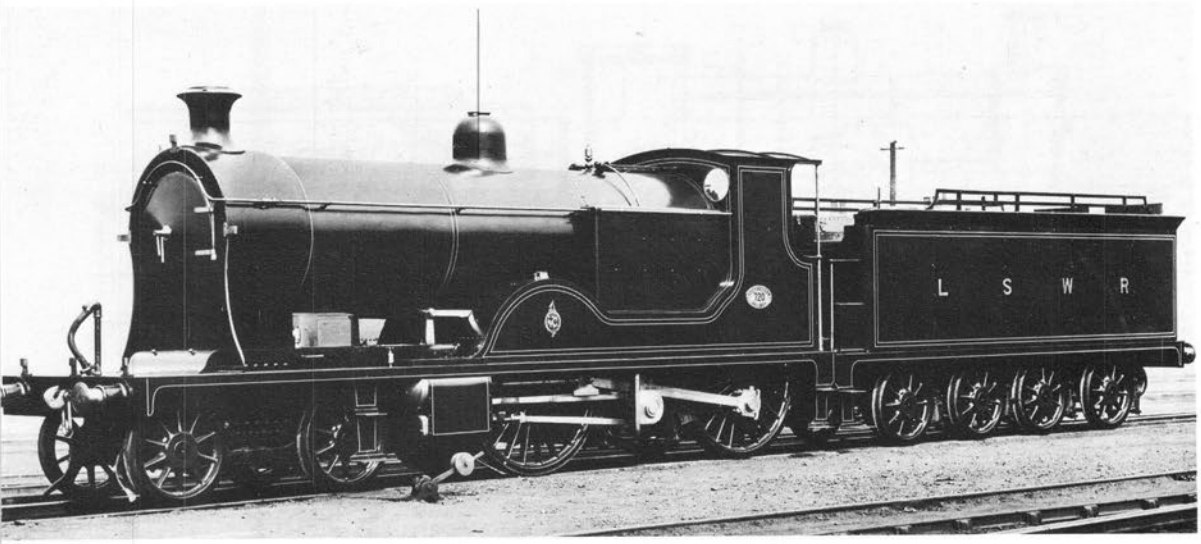
Centre right: In an attempt to improve the indifferent performance of No 720 a larger boiler was fitted, in 1905, sadly without significant effect. *British Rail SR*

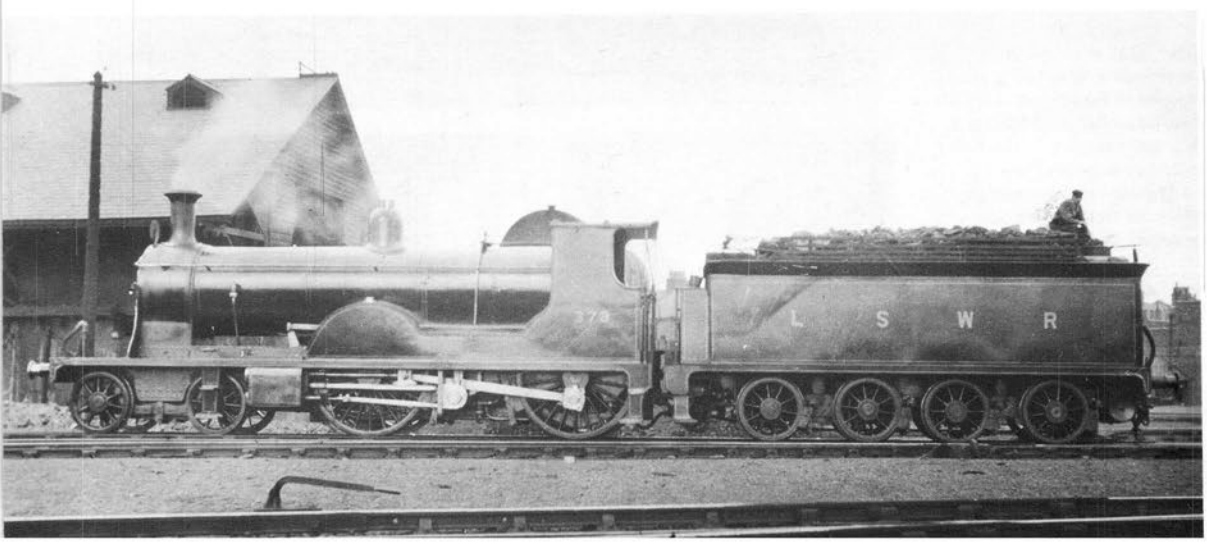
Bottom right: Despite the mediocre results gained with No 720, Drummond proceeded to build five more of the type (basically similar in dimensions to No 720 as built), which became the 'E10' class. No 373 was photographed at Nine Elms in 1920 and this view shows well the massive tender — certainly the name of 'Water Cart' was apposite! *A. B. MacLeod*

Below: Outline drawing of the Class T7 4-2-2-0; introduced in 1897




L S W


L S W R


L S W R

4-4-0 LSWR and SR Class C8 (Power class I)
Intermediate Passenger Locomotives
Introduced: 1898
Total: 10

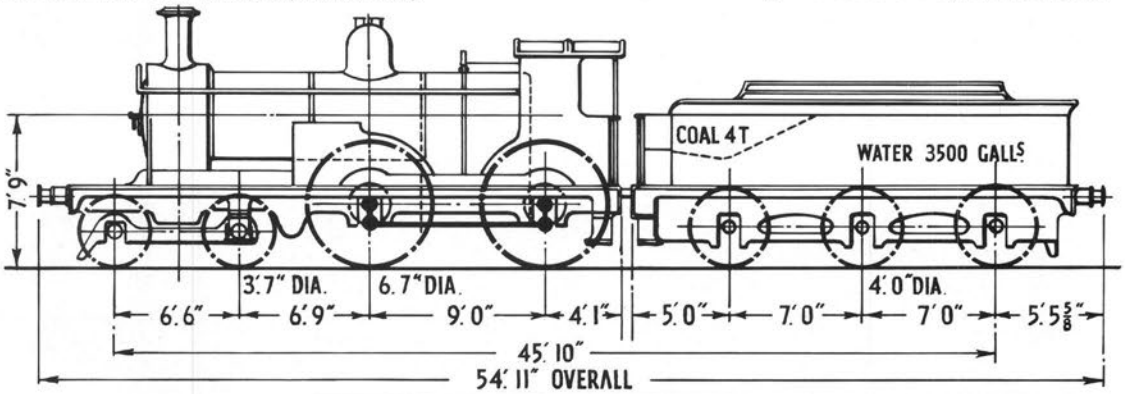
Dugald Drummond's first 4-4-0 class for the South Western was really intended for semi-fast work and was based on his NBR '476' and CR '66' classes. Apart from the steam reverser the 'C8' class was spared the many Drummond devices that unhappily plagued drivers and maintenance staff. The boiler was standard with the 'M7' and '700' classes. The only change made was the substitution of 'Water Carts' for the original six-wheeled tenders, the latter being transferred to succeeding engines of the 'K10' and 'L11' classes (Section 23).

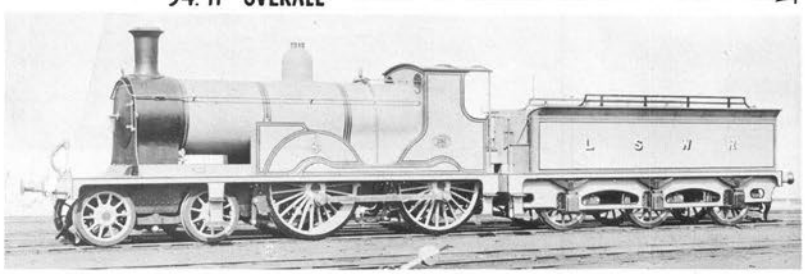
In service the class suffered from the smallness of the firebox and apart from a few months spent on Bournemouth and Salisbury expresses they worked on secondary and excursion duties, moving around most LSWR sheds over the years, being rather unwanted wherever they went.

The 10 engines, Nos 290-9, were built at Nine Elms in 1898.

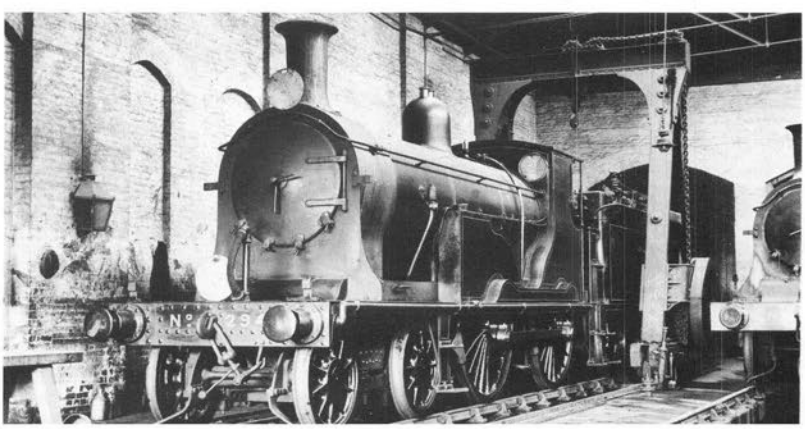
First of class withdrawn: 294 (2/1933)
Last of class withdrawn: 298 (1/1938)
None preserved

Below: Outline drawing of Class C8 4-4-0, introduced 1898.





Above right: In works, or 'photographic' grey livery, and attached to the secondhand six-wheeled tender originally used, (later replaced by a 'Water Cart'), No 292 of Dugald's Class C8 4-4-0 design for intermediate passenger work is seen here.
Ian Allan Library



Right: A truly beautiful study of Class C8 No 294 'on shed' under the hoist. Maunsell green livery.
Rail Archive Stephenson

SECTION 21

4-4-0 LSWR and SR Class T9 (Power class H); BR 2P (later 3P) Passenger Engines

Introduced: 1899
Total: 66

The most numerous of all Drummond's passenger engines, the 'T9' class, or 'Greyhounds' to use their popular name, is undoubtedly the type by which he will always be best remembered. Almost up to the end of steam on BR they were to be seen on a great variety of passenger work, which they handled with distinction, yet in their early days there was little to distinguish them from other South Western engines. It was the conversion to superheating that transformed them and made the title 'Greyhound' more than justified. That endearment arose from their greater comfort than the Adams outside cylinder engines, and their reduced fuel and water consumption, and they were just that bit quicker in getting away.

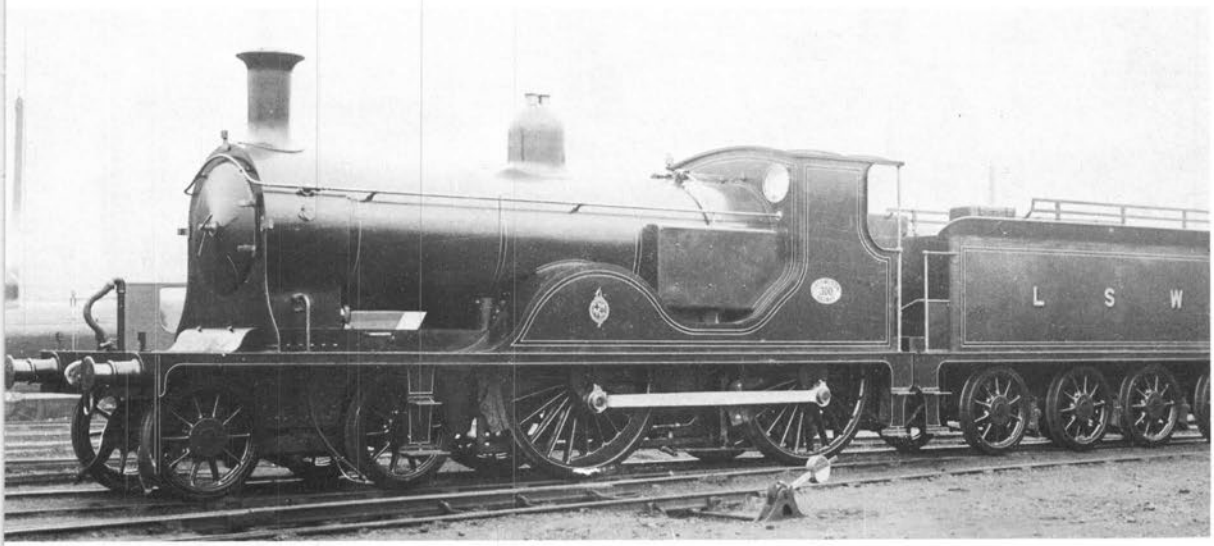
As built in 1899-1901 the class existed in three groups:

(a) 31 engines built by Dubs in 1899-1901 with water tube fireboxes and six-wheeled tenders,
(b) 20 engines built at Nine Elms in 1899-1900 with six-wheeled tenders,
(c) 15 engines built at Nine Elms in 1900-1 with water tube fireboxes, full width cabs and splashers and 'Water Cart' tenders.

The odd engine in group (a) was No 773, built by Dubs for exhibition purposes at Glasgow and Newcastle-upon-Tyne, its show finish being superb. The engines of group (c) had steam sanding with sandboxes in the smokebox delivering sand between the bogie wheels, but later they had a more sensible arrangement of gravity sanding as on the rest of the class. Steam reversers were a standard fitting. In 1902-7 tender exchanges resulted in the whole class running with 'Water Carts'. Nos 337/8 were dual braked until 1934-5.

Superheaters were fitted in 1922-9, using the Eastleigh version in 1922-4 and then the Maunsell type, which replaced the former as well. Further tender changes were made in 1925 to make 10 of group (c) available for use on the Eastern Section and in 1928 to produce six for the Central Section (on both sections 'Water Carts' could not be used); it was not until 1940 that all these engines returned to the Western Section. In the war years Nos 303/4/7/12 were lent to the LMSR and used on the Somerset and Dorset. In 1947 13 (out of 15 intended) were converted to burn oil (Nos 113-5/8/21, 280/6, 303/5/14, 713/22/31) and in this form

Below: Class T9 4-4-0 No 300 built at Nine Elms in 1900, with water tube firebox, full width cab and splashers, and 'Water Cart' tender. *LPC*



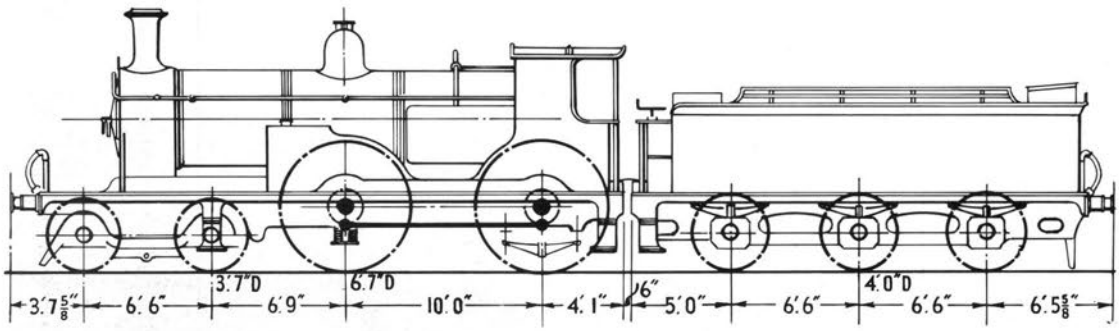
they were both popular and efficient (having electric lighting) but none worked again when oil burning ceased in 1948. Only Nos 113/4/6/8, 280, 303/5/14, 713/22/3/31 were not renumbered by British Railways.

The engines were built as follows:

Nos 702-19/21-7	Dubs	1899
Nos 728-32	Dubs	1900
Nos 113-22, 280-4	Nine Elms	1899
Nos 285-9, 300-2	Nine Elms	1900
Nos 303-5/7/10-4/36-8	Nine Elms	1901
No 773*	Dubs	1901

*Renumbered 733 in 1924

First of class withdrawn: 280, 714 (3/1951)
Last of class withdrawn: 30287 (8/1961)
Preserved: No 120

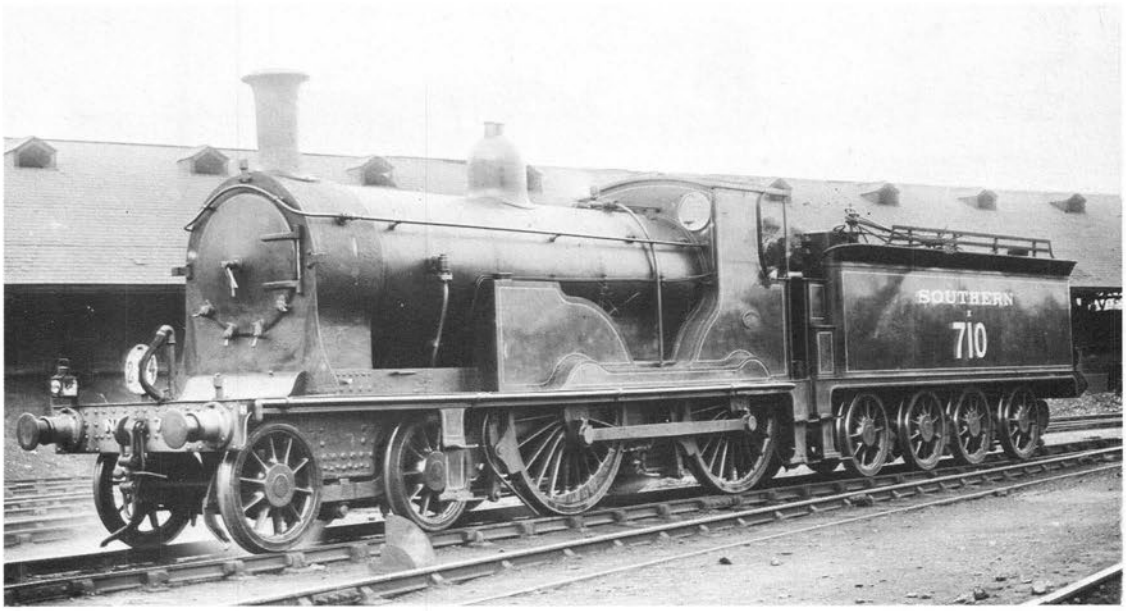


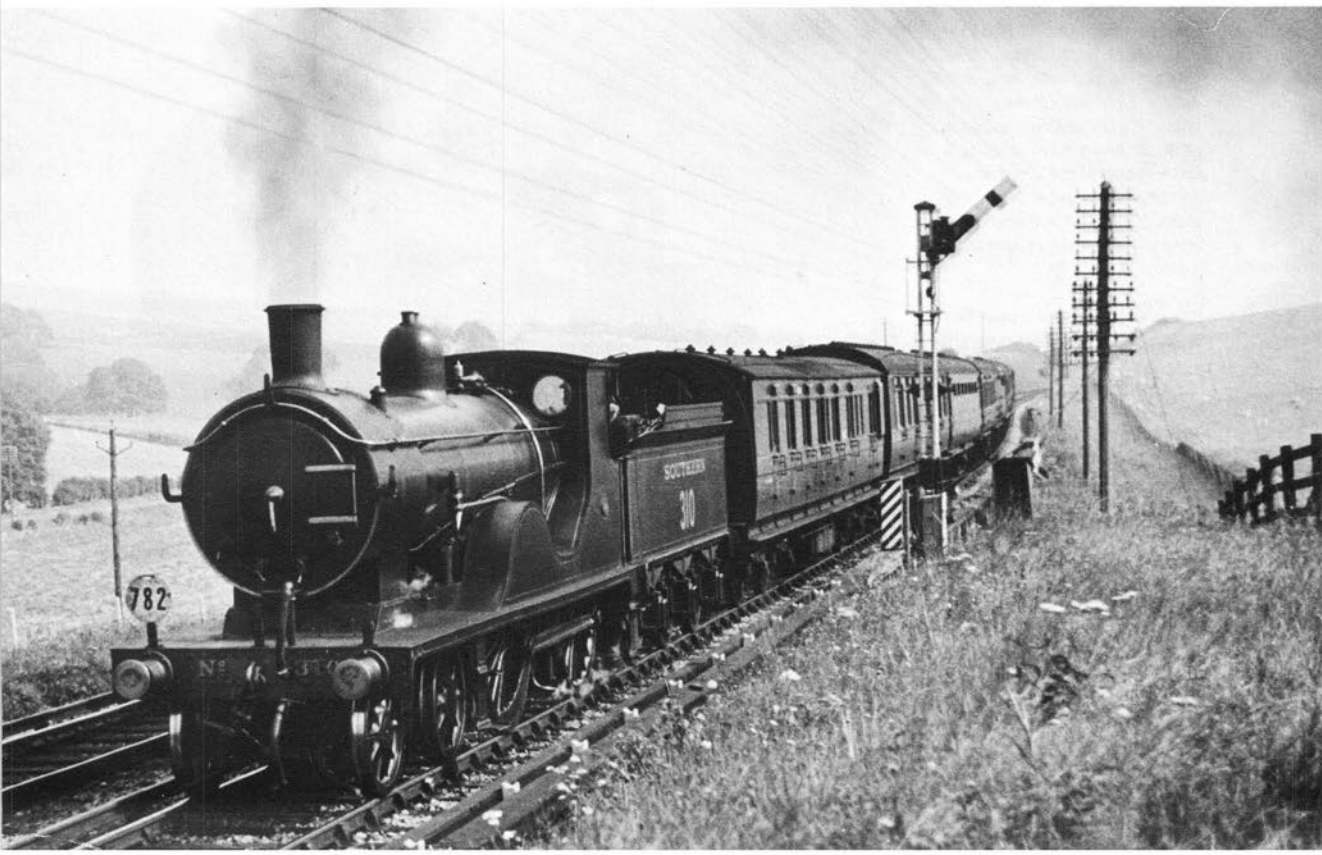
Above: Outline drawing of class T9 4-4-0, introduced 1899. This depicts the six-wheeled tender first fitted.

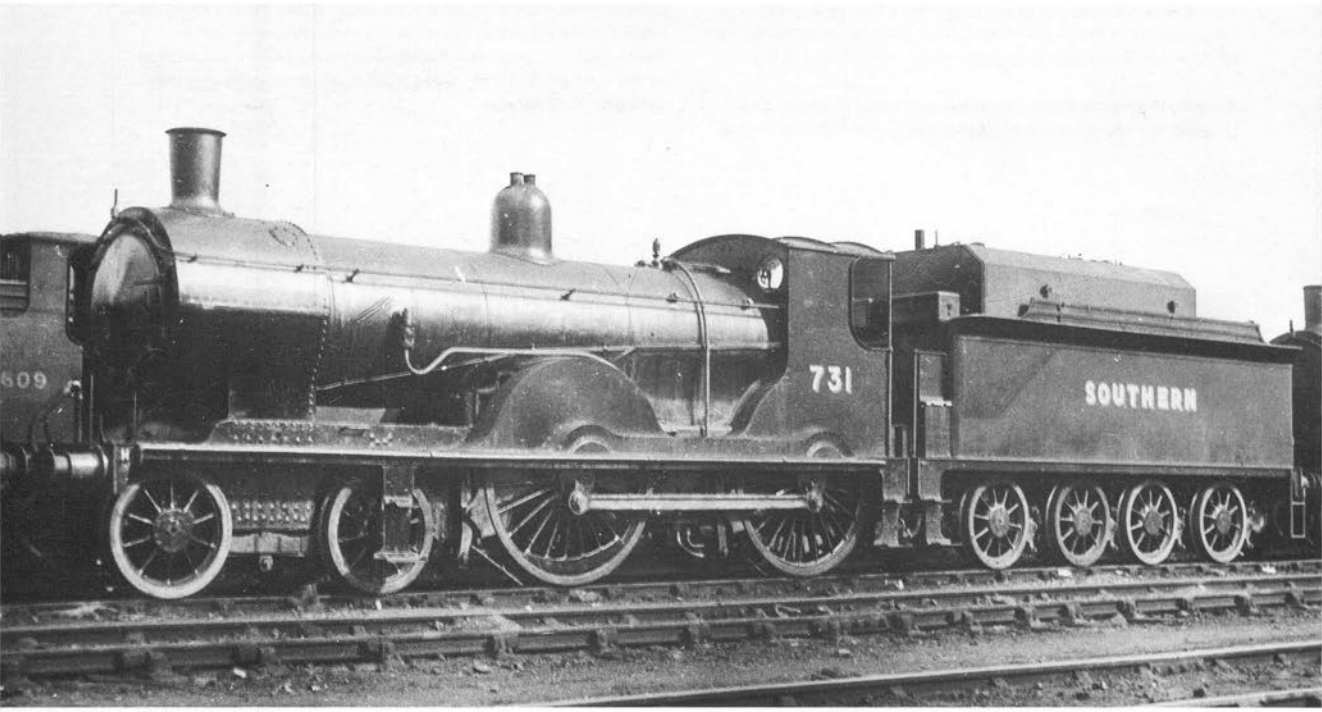
Below: No 702, the first of the class to be built, by Dubs in 1899, but seen here after receiving a 'Water Cart' tender in place of the original six-wheeler. Water-tube firebox and narrow cab and splashers to the coupled wheels, with additional small splashers to clear the coupling rods. *LPC*

Below: In SR passenger green livery, No E710 shows well the elegant lines of the Drummond design and the large 'Water Cart' tender with inside bearings to the axles. *Ian Allan Library*

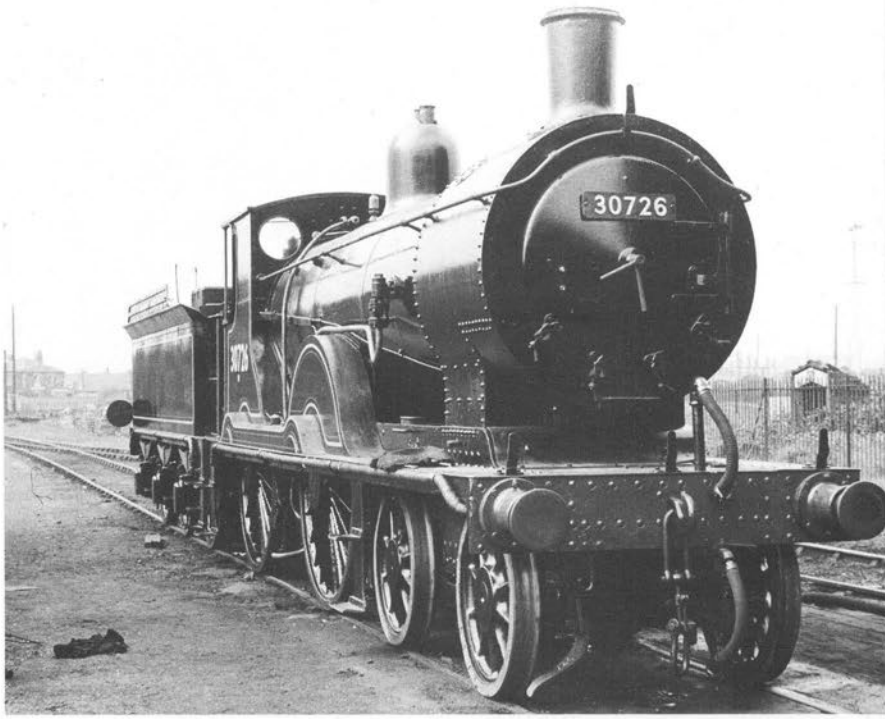
Bottom: Without a capuchon to the stovepipe chimney, and coupled to a six-wheeled tender for use on the Central Section (where 'Water Carts' could not be used), Class T9 4-4-0 No 310 makes a fine picture at the head of the northbound 'Sunny South Express', seen near Falmer between Lewes and Brighton in the summer of 1936, with LMSR stock of mixed origin and vintage. *F. R. Hebron*



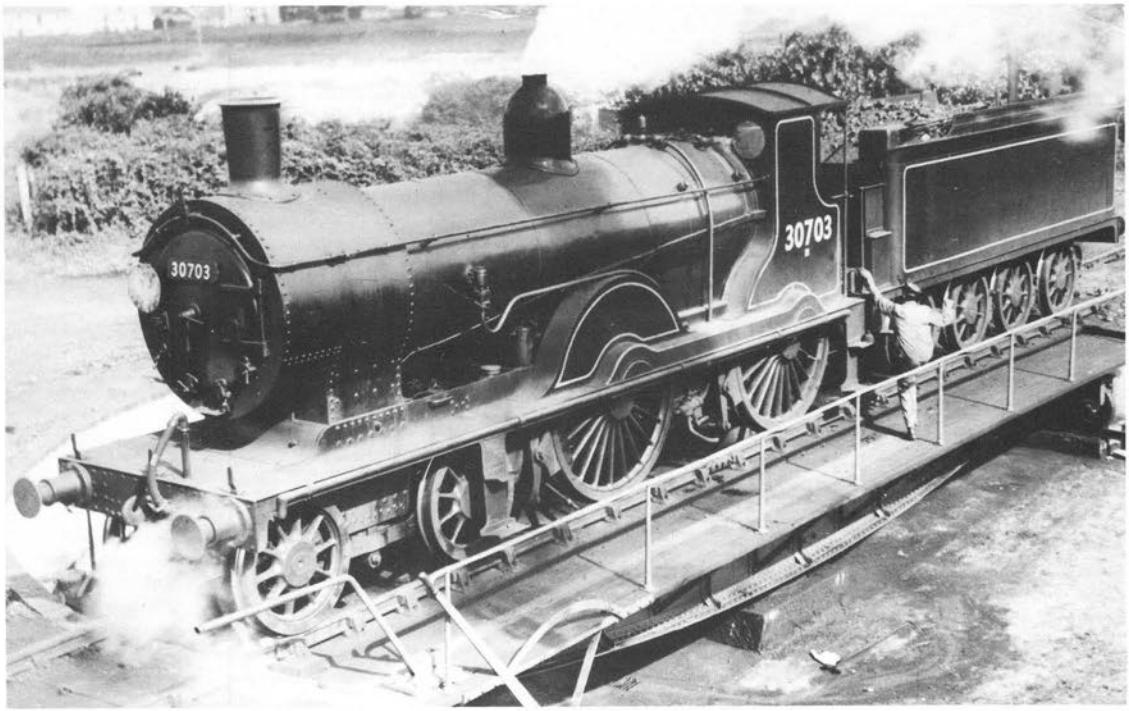




Above: One of the 'T9' class 4-4-0 converted to oil-burning in the abortive 1947 Government-sponsored scheme, No 731 seen at Eastleigh on 20 September 1947. This particular engine did not have electric lighting fitted (as some of the class carried when oil-fired) and a detail change is the removal of the smokebox snifting valves (note the patch). Black livery with 'sunshine' lettering in golden yellow shaded green. *A. F. Cook*



Right: After the war a few 'T9s' sported Bulleid's malachite green livery (including the 'Royal' engine No 119) but plain black was the livery for most. When BR chose to give them the LNWR-style mixed traffic lining to the black, it enhanced them a little, but there is no denying that the green suited them better! Class T9 4-4-0 No 30726 is seen in the works yard at Eastleigh on 30 April 1949, in a fresh coat of BR black. No totem on the tender, as Eastleigh was temporarily out-of-stock! *R. E. Vincent*



Above: Another 'T9' in BR lined-black and without BR totem, caught by the camera as she is turned, (location unknown,) evidently soon after return to traffic from a visit to the works in 1949. *Ian Allan Library*

Below: Humble duty for a 'Greyhound', as No 30338 passes Stewarts Lane shed, at Longhedge Junction on a Battersea-Nine Elms transfer freight, on 27 February 1957, with the Stewarts Lane coaling plant in the right hand background, and 'D1' class 4-4-0 No 31743 in the siding on the right. *R. C. Riley*

SECTION 22

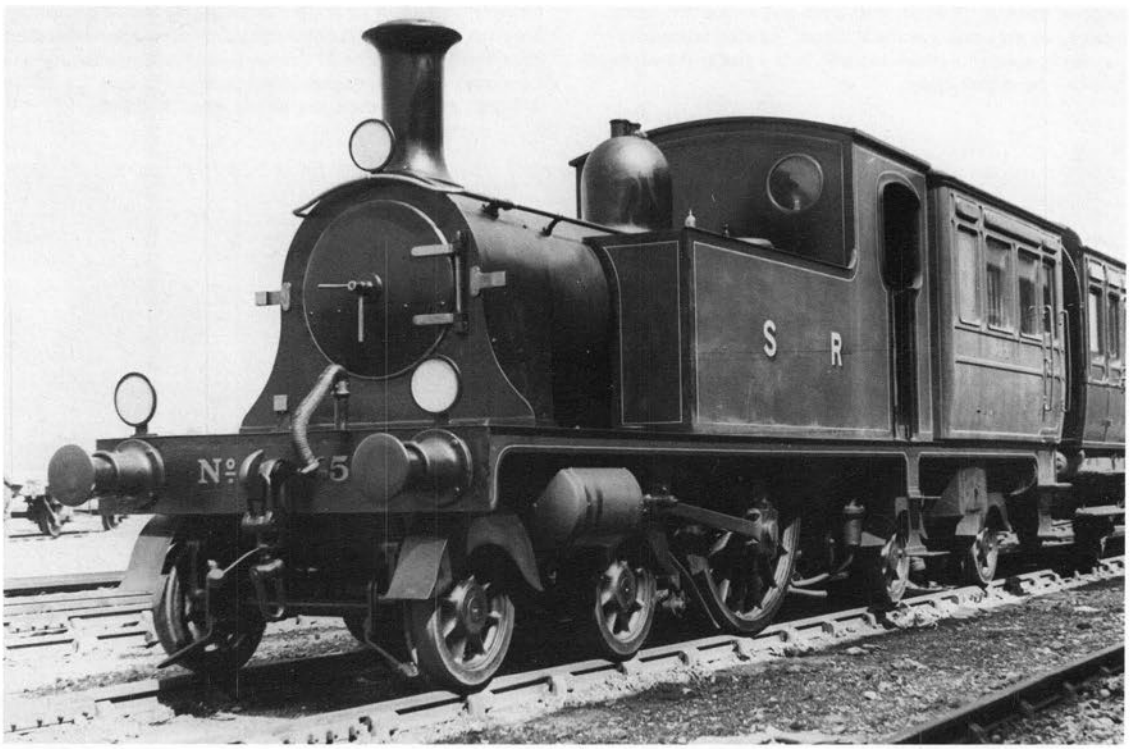
4-2-4T LSWR and SR Class F9 (no power classification)
Special Light Tank Engine

Introduced: 1899
Total: 1

For Drummond's daily travels and visits around the system a small combined engine and carriage, rejoicing in the name of the 'Bug' was built at Nine Elms. The engine part was a conventional single driver, although quite small, and the coach portion was a simple gaslit saloon placed over the rear bogie, its accommodation consisting of a small buffet, table and umbrella stand, with a toilet in one corner. There was electric bell communication with the footplate and a small circular window in the partition so that Drummond could see all that was going on. Vacuum brake equipment was fitted but only a single pair of blocks acted on the driving wheels. In 1913 the vehicle was transferred to service stock, Urie having no use for it, and in 1924 it was renumbered 58S. After that the only use made of the machine was in 1932 when for some months it hauled an ex-SECR six-wheeler around Southampton Docks for visiting parties during extension works. Afterwards it was stored at Eastleigh works and some thought was given to preserving this oddity but eventually it was condemned in 1940 (actually it had been condemned in 1931 and reprieved in 1932). The coach portion is in fact preserved by the Hampshire Narrow Gauge Railway Society at Durley. One discarded Drummond feature it retained to the end was the smokebox tubeplate clacks.

Withdrawn: 8/1940
Not preserved

Below: Dugald Drummond's 'Bug', 4-2-4T of Class F9. His personal inspection train, comprising a combined engine and carriage was introduced in 1899 and was a familiar feature on the LSWR system in Drummond's time, but Urie did not share his liking for it and it was stored for many years, having only occasional outings. The carriage portion survived as a 'grounded body' at Eastleigh carriage works for many years after the engine was withdrawn and is now preserved. *Ian Allan Library*



SECTION 23

4-4-0 LSWR and SR Classes K10 and L11 (Power class F); BR 1MT Mixed Traffic Engines

Introduced: 1901 ('K10') and 1903 ('L11')
Total: 40 ('K10'), 40 ('L11')

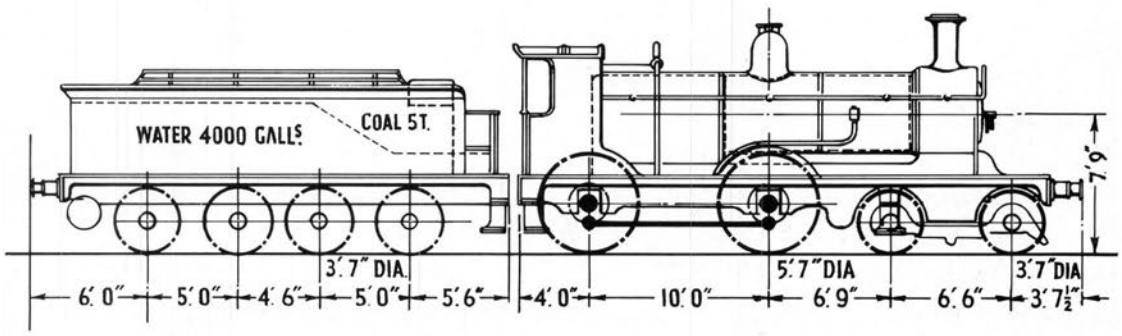
The apparently insatiable demand for mixed traffic engines on the LSWR continued into the Drummond era and so he produced two such classes in 1901-7, paralleling the enlargement of the 'C8' into the 'T9' class. The earliest of the two classes, built in 1901-2, was based on the CR '80' class ('Coast Bogies') and the second of 1903-7 had a larger firebox, utilising the longer coupled wheelbase of the 'T9' class. At first the original engines were known as 'Grasshoppers' but soon the two types became 'Small' and 'Large Hoppers' respectively. The same boiler barrel was used, but the centre line was higher on the 'Large Hoppers' because of the deeper firebox. Both had water tubes in the firebox, but 'Small Hopper' No 343 started with an experimental boiler which had a single central flue with 215 water tubes crossing at various angles, augmented by 18 ordinary firetubes, the heating surface comprising 86sq ft for the circular flue, 427 from the firebox, 124 from the firebox and 100 from the water tubes (total 737sq ft); officially this engine was some 2½ton heavier. While performance was good and perhaps marginally better than the rest the complex boiler was a constant source of trouble and was replaced in 1906. Urie dispensed with the water tubes and the boiler of the 'K10' class then became standard with Classes M7, 700 (before superheating) and C8. Of the 'Large Hoppers' those built in 1906-7 were fitted with duplex pumps which were replaced by injectors after 1913.

Thirty of the 'Small Hoppers' received second-hand six-wheeled tenders (3,500gal type) when built, the new tenders being attached to 'C8' and 'T9' engines which had surrendered theirs to the new engines, but the other 10 had new tenders. Forty 'Water Carts' were built with the 'Large Hoppers' but only Nos 174/5, 407-13 received them, the rest getting six-wheelers from other 'C8' and 'T9' engines which took the larger tenders. Nos 440/1 were dual braked until 1934-7.

Both classes were used widely over the LSWR and neither was superheated. A further series of tender changes in 1925-8 resulted in all the 'Large Hoppers' (except Nos 440/1) running with 'Water Carts' and with the short wheelbase tenders on many of the 'Small Hoppers'. In 1941 five of the 'K10' class were lent to the LMSR (classified 2P) and worked mainly at Bristol and Gloucester, all getting repaired at Derby works; Nos 135/7/8 went to Nottingham in 1944 and returned to the Southern at the end of the year, but Nos 388/9 stayed at Bristol until 1945. No 394 was lent to the War Department in 1941-2. In the oil burning scheme of 1947 15 of the 'Large Hoppers' were selected but only Nos 148/54/5/7/70/2, 411/37 were altered, getting electric lighting as well; when the scheme ended none ever ran again.

Only No 382 of the 'K10' class and Nos 134/56/9/63/4/6/71/3-5, 405-7/9/38/42 of the 'L11' class were renumbered by British Railways. The engines were built as follows:

Below: Outline drawing of the Class L11 4-4-0, with 'Water Cart' tender attached, introduced in 1903. The 'K10' was virtually identical except for a 9ft wheelbase between driving wheels.



Class K10

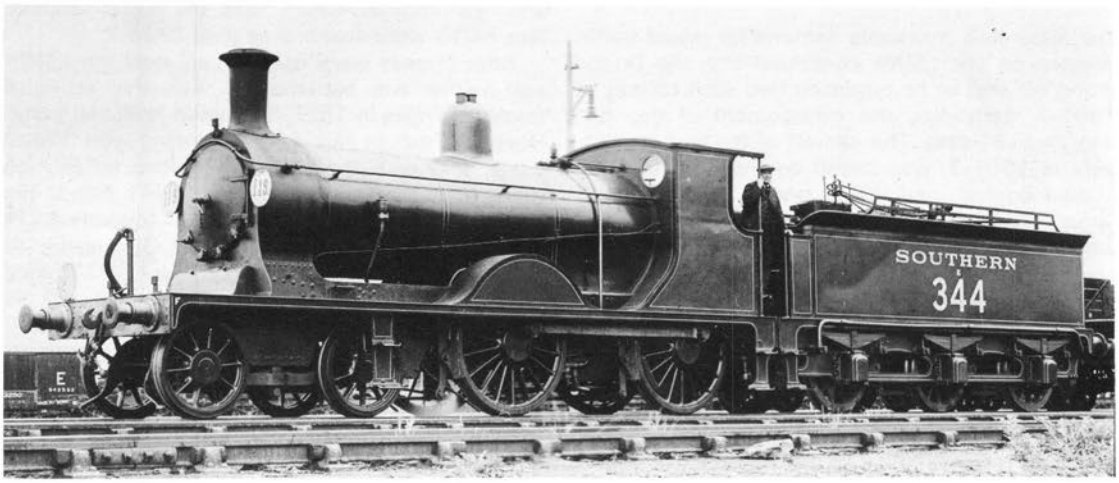
Nos 329/40-4	Nine Elms	1901
Nos 135-46/9-53, 345/7/80-94	Nine Elms	1902

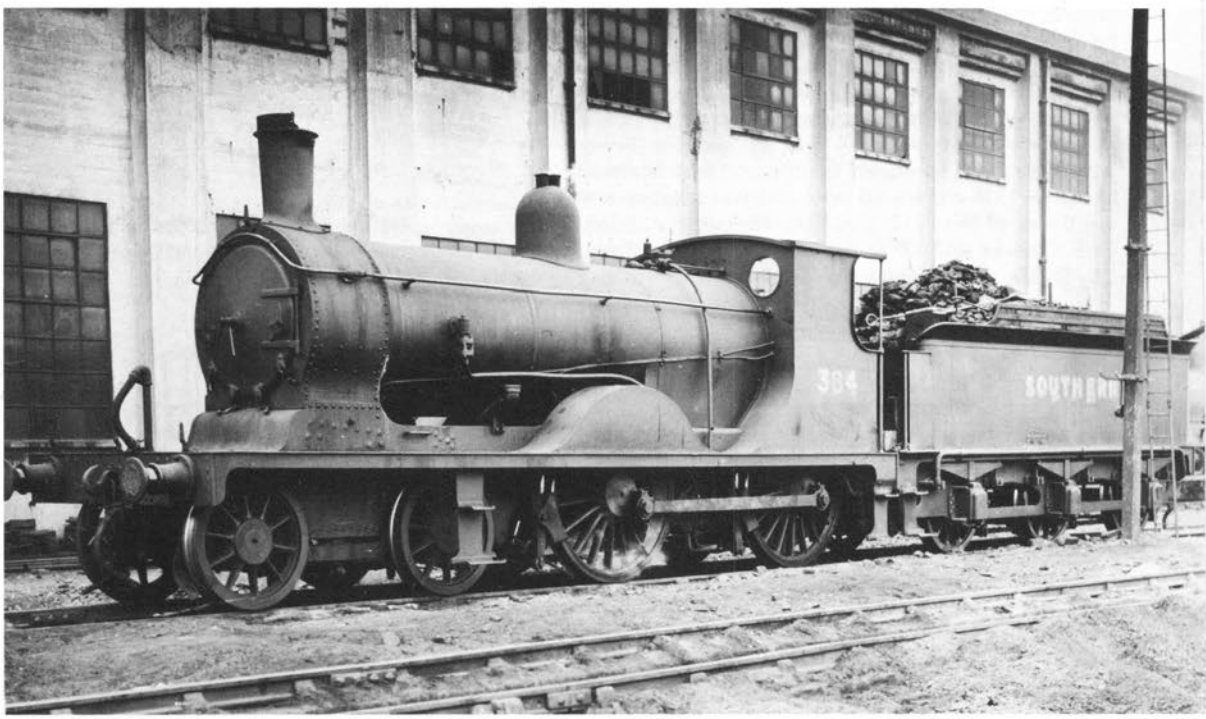
Class L11

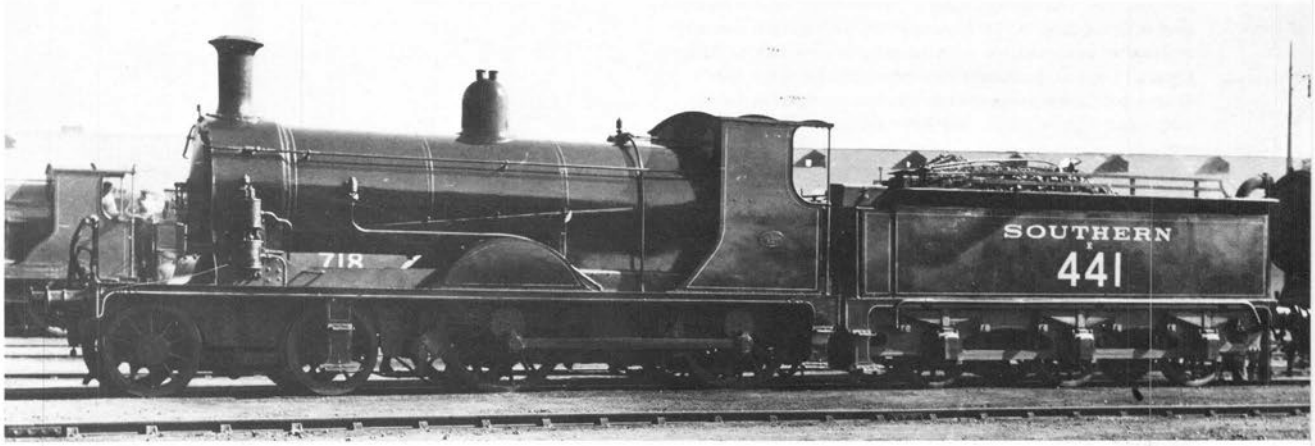
Nos 154-9/61/3-5	Nine Elms	1903
Nos 134/48/66-73	Nine Elms	1904
Nos 174/5, 405-14/35-7	Nine Elms	1906
Nos 438-42	Nine Elms	1907

First of class withdrawn: 'K10' 136/49, 342/4 (1/1947); 'L11' 439/40 (5/1949)
Last of class withdrawn: 'K10' 384 (8/1951); 'L11' 30409 (6/1951)
None preserved

Below: Class K10 4-4-0 No E344, in SR prewar Maunsell green livery, built by the LSWR at Nine Elms in 1901 and fitted with a six-wheeled tender. These 'Small Hoppers' were similar in design to the CR 'Coast Bogies' (see page 47). *LPC*







Left: Nearing her final days in service, and quite remarkably still carrying a capuchon to the Urie stovepipe chimney, Class K10 4-4-0 No 384 in black livery with postwar 'sunshine' lettering and numerals, is seen here at Feltham shed. *E. R. Wethersett*

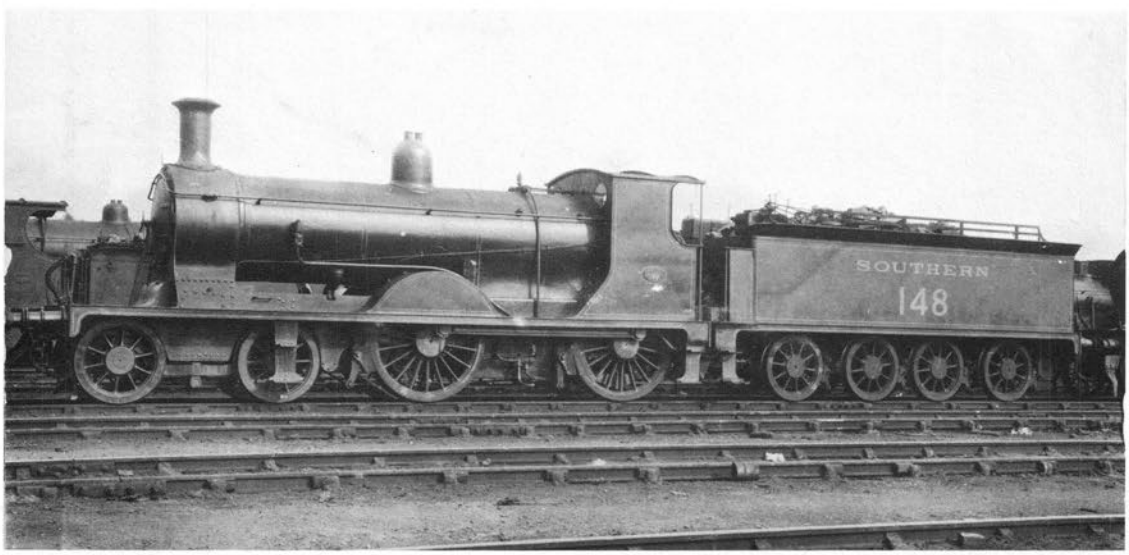
Top: Photographed at Nine Elms on 22 December 1917, Class L11 4-4-0 No 166, built at Nine Elms in 1904. Water tube firebox and six-wheeled tender. *Ian Allan Library*

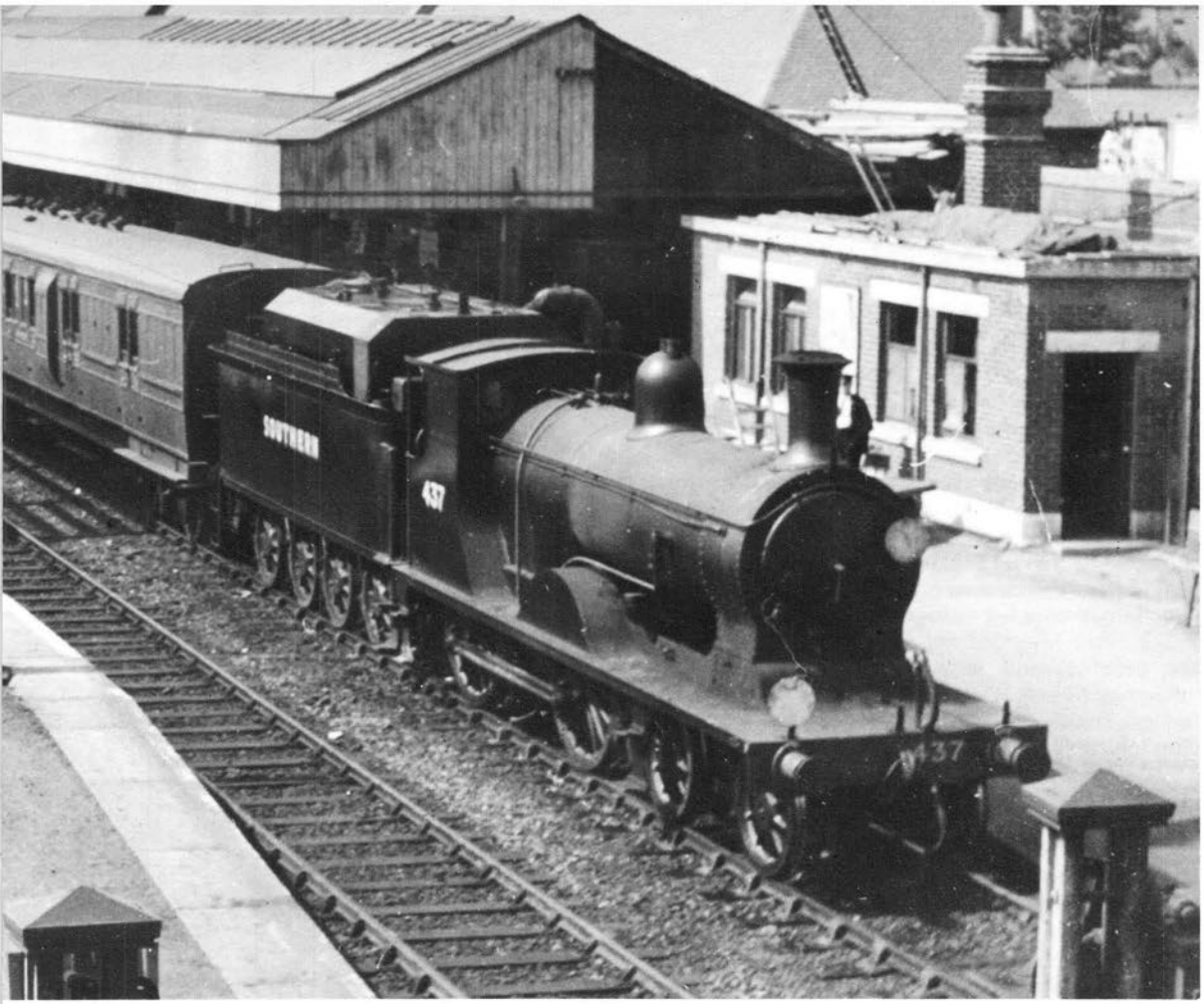
Above: Fitted with an air pump, this Class L11 with six-wheeled tender, No E441 was probably used on air-braked stock working over SR Western Section metals. (One type of stock which made such through journeys quite often were horseboxes, and those originating from the former GER area, for example, had air-brakes instead of vacuum.) *LPC*

Below: Compared to the previous picture of No E441, this view of No 148 shows the way the eight-wheeled 'Water Cart' tender 'dwarfed' the elegant lines of the engine. *LPC*

Right: One of the 'L11' class that actually went into everyday service as an oil-burner during the 1947 scheme, is seen here at Southampton Central on a local train. No 437 is in plain black livery with 'sunshine' lettering. *Frank F. Moss*

Bottom right: The fireman takes a welcome rest on the platform seat at Umberleigh on 10 August 1950. Perhaps the 'old lady' had made heavy weather with the quite lengthy pick-up freight! Class L11 4-4-0 No 30409 (renumbered in BR stock, but retaining SR livery,) was the last survivor of the class, being withdrawn in June 1951. *Ian Allan Library*




SOUTHERN
437

SOUTHERN
30409

4-4-0 LSWR and SR Class S11 (Power class E) and L12 (Power class D); BR 2P

Express Passenger Engines

Introduced: 1903 ('S11') and 1904 ('L12')

Total: 10 ('S11') and 20 ('L12')

The 'L11' mixed traffic engines immediately proved their worth on semi-fast trains between Salisbury and Exeter, so it was not a great step to use the 'L11' frames with larger coupled wheels of six feet diameter and a bigger boiler. 10 such engines appeared as the 'S11' class in 1903, and just as in the past, Nine Elms then produced the 'L12' version with larger coupled wheels of 6ft 7in diameter. These were intended for use between Waterloo and Salisbury and on the Bournemouth line. The boiler had firebox water tubes and the 'Water Cart' tenders contained a feed water heater in the well, with injectors on the 'S11' class and pumps on the 'L12'; it was on these two classes that Drummond introduced his patent balanced crank axle. On both classes the cab and splashers used the full width of the platform, and with the larger boiler produced fine looking locomotives; the 'L12' engines being perhaps just a little better in proportions because of the larger coupled wheels.

All engines of both classes were fitted with superheaters by Urie in 1915-22, and somewhat unusually in British practice slide valves were retained. Of the 'L12' class Nos 415/23/4 were fitted up as oil burners in 1921, Nos 415/24 with No 420 being fitted again in 1926.

In 1906 the derailment of No 421, when passing through Salisbury at a speed higher than that permitted, was the cause of the greatest loss of life in an accident on the London & South Western Railway.

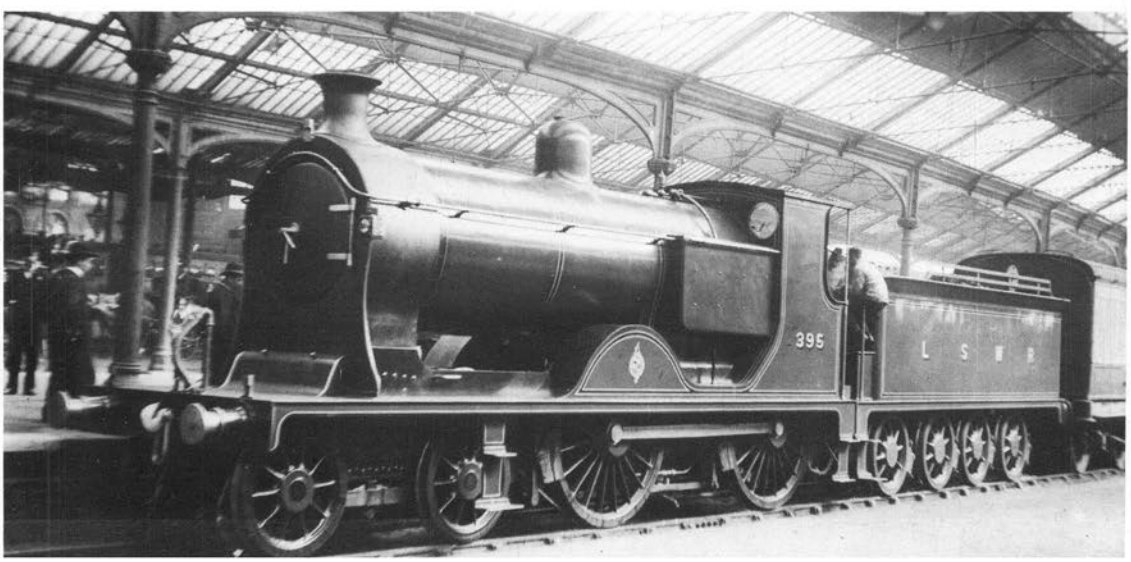
The SR found it necessary to transfer 10 of the 'L12' class to its South Eastern Section and had to make an exchange of tenders with the 'K10' and 'L11' classes as well as fitting short stovepipe chimneys and reduced height safety valves; some of these engines then moved to the Central Section and it was not until 1947 that all were back on the Western Section. All 10 of the 'S11' class engines were lent to the LMSR in 1941-5, working mostly on the Somerset & Dorset, but they got as far away as Derby and Peterborough. All except Nos 395, 401/20 were renumbered by British Railways.

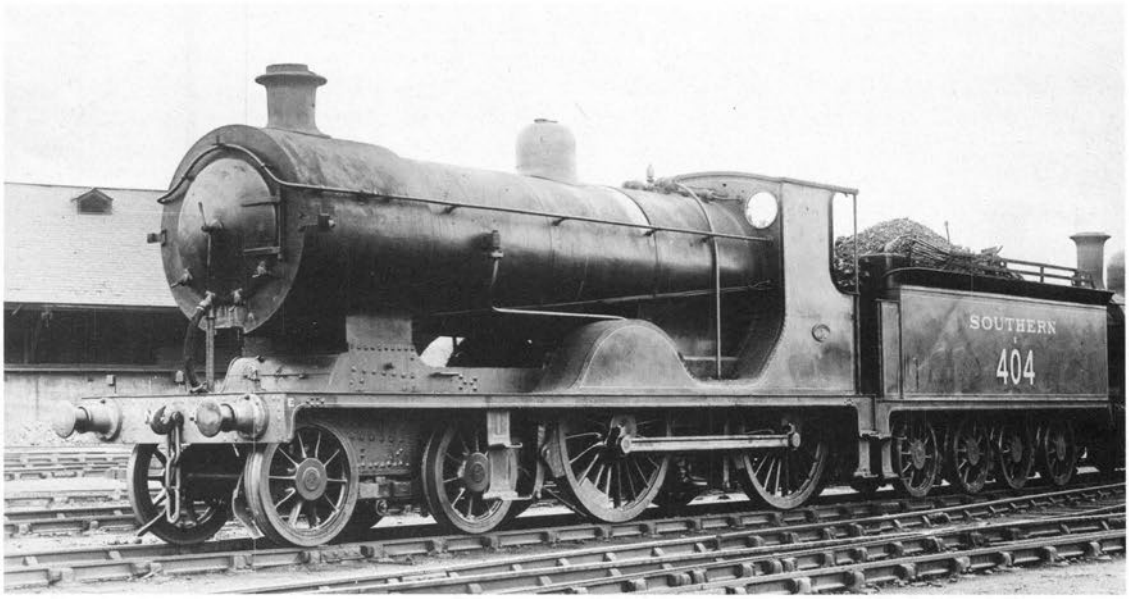
The two classes were built as follows:

Nos 395-404	'S11'	Nine Elms	1903
Nos 415-34	'L12'	Nine Elms	1904

First of class withdrawn: 'S11' 30402 (2/1951); 'L12' 30430 (3/1951)
Last of class withdrawn: 'S11' 30400 (10/1954); 'L12' 30434 (2/1955)
None preserved

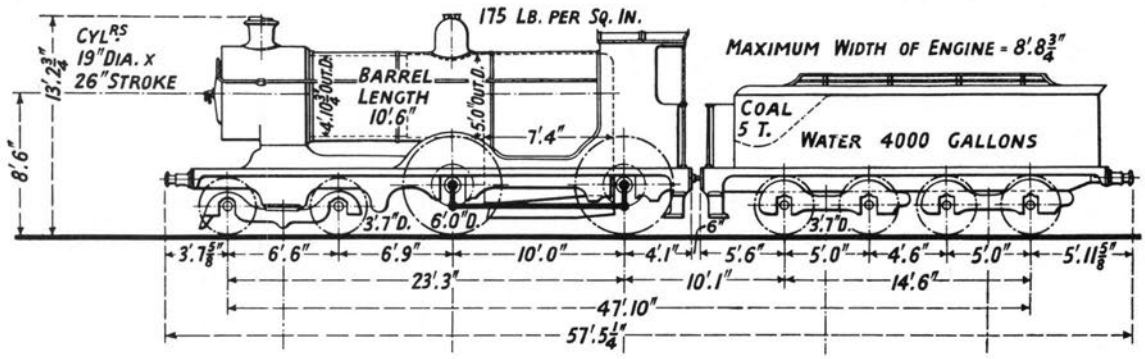
Below: In terms of appearance the 'S11' class 4-4-0s introduced in 1903 were undoubtedly one of Dugald Drummond's masterpieces! The fine proportions of the engine matched the big 'Water Cart' tender, unlike some of his previous designs, and the large boiler gave a handsome look to the front end. No 395, the first of the class, built at Nine Elms in 1903, is seen here at Waterloo in 1910, fitted with water tube firebox. *Wentworth S. Gray*



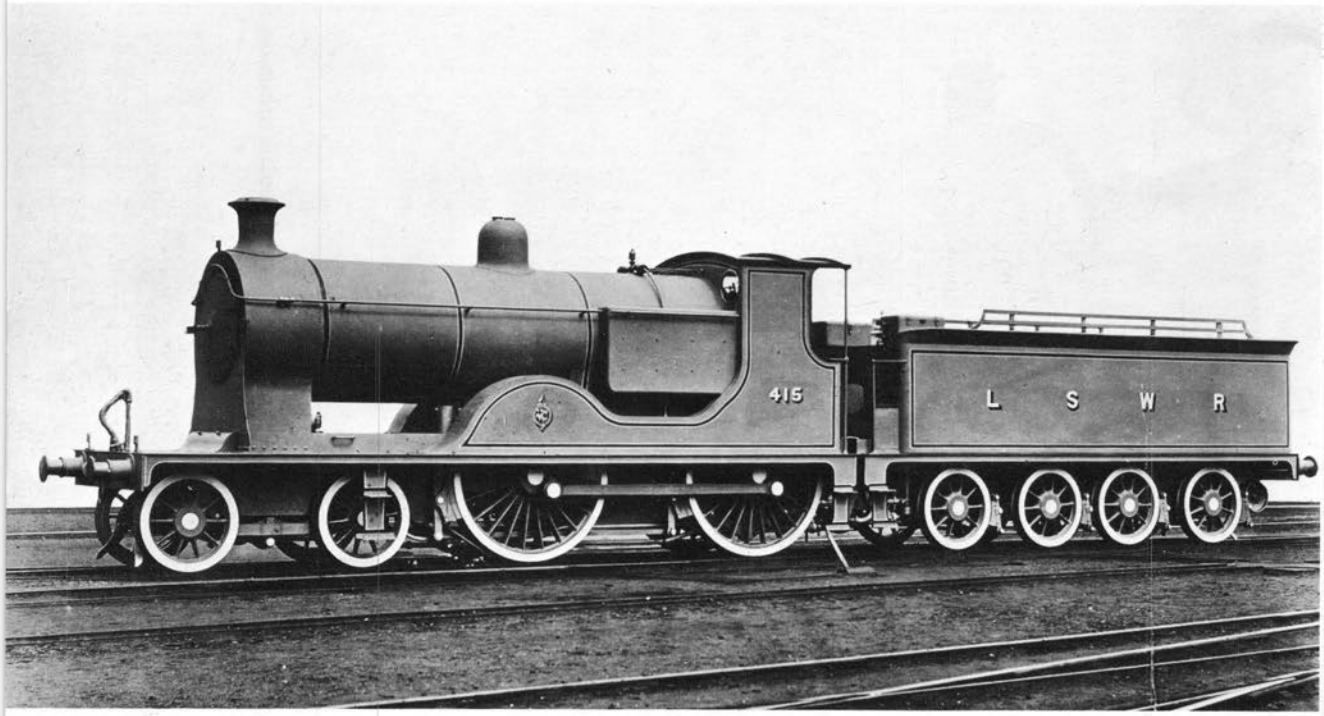


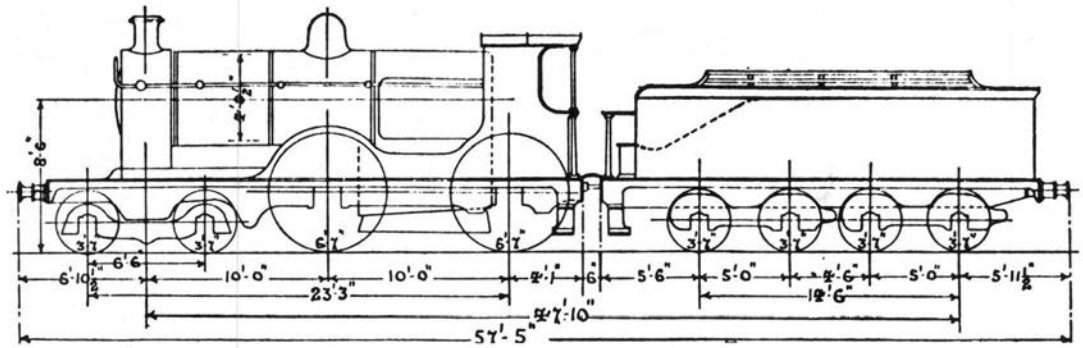
Above: Class S11 4-4-0 No E404, as running in SR days with extended smokebox, and superheater, by Urie. *Ian Allan Library*

Below: Outline drawing of the 'S11' class introduced in 1903, seen in later Urie form.



Left: With the slopes of Box Hill in the background, (Bulleid's wartime home was at the foot of the clump of trees in the distance beyond the locomotive's chimney), Class S11 No 401 climbs from Deepdene to Dorking Town with the 12.31pm Redhill-Reading train on 25 July 1951. This shows the later condition of the class, with reduced height stovepipe chimney.
J. B. Heyman



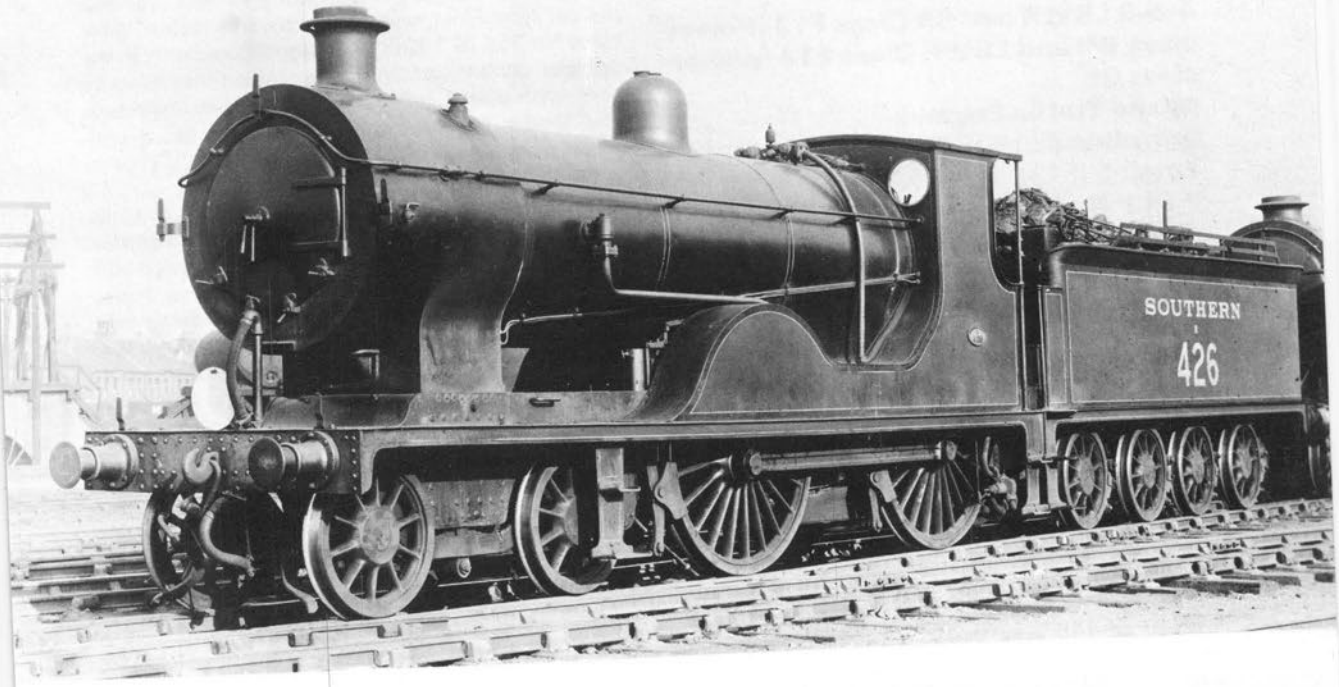


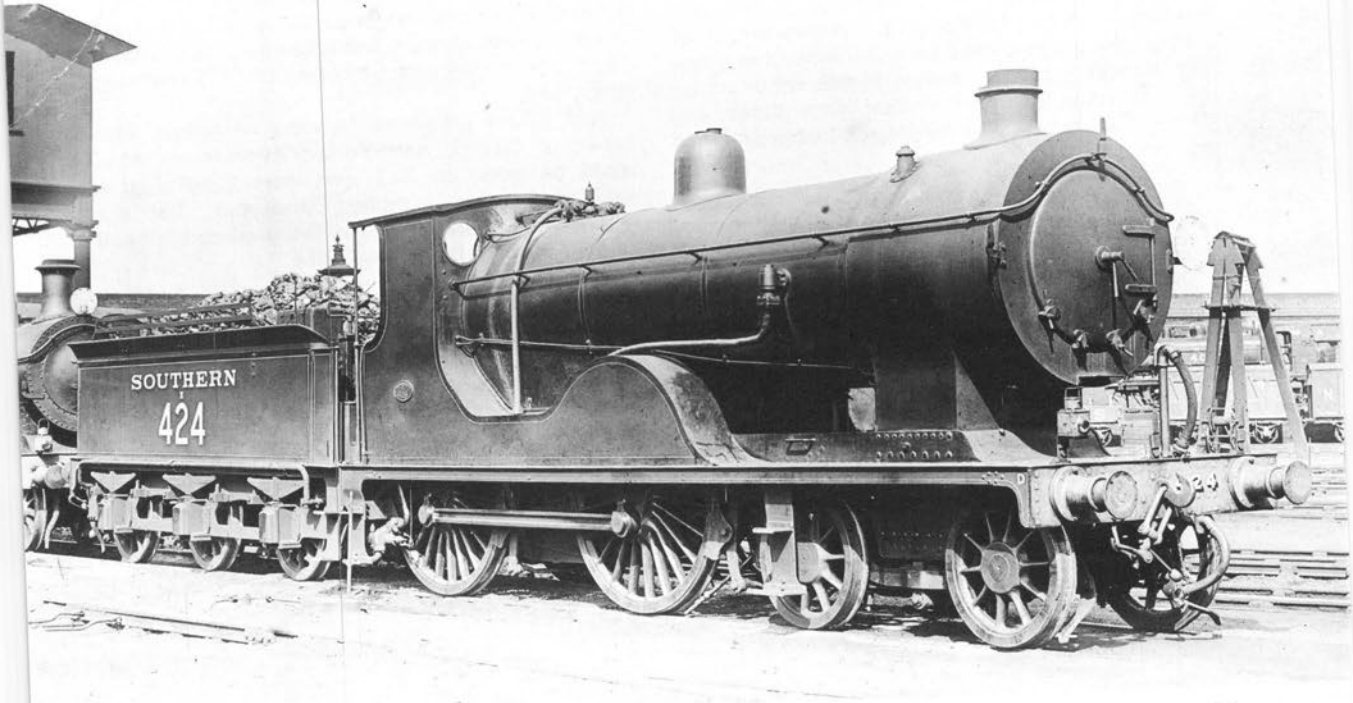
Top: With an increase in coupled wheel diameter from the 6ft 0in of the 'S11' class, to 6ft 7in, the Class L12 version produced in 1904 was perhaps even better in its overall proportions. The first of the class, No 415 is depicted in works grey livery, for photographic purposes; when new. *LPC*

Above: The 'L12' version of the design, with larger coupled wheels, introduced in 1904, is depicted in this general arrangement.

Top right: Modified by Urie, with superheater and extended smokebox (note snifting valve on the smokebox) and with water tubes removed from the firebox, Class L12 No E426 is illustrated in SR passenger green livery. *LPC*

Right: A stovepipe chimney, complete with capuchon, seen on No E424, did little for the aesthetic qualities of the 'L12' 4-4-0. Ten of the class went to the South Eastern Section for some time, before the war, and these were fitted with lower stovepipe chimneys, and attached to six-wheeled tenders, as seen here. *LPC*


SOUTHERN
426


SOUTHERN
424

SECTION 25

4-6-0 LSWR and SR Class F13 (Power class B*) and LSWR Class E14 (power class B)

Mixed Traffic Engines

Introduced: 1905 (F13) and 1906 (E14)

Total: 5 (F13), 1 (E14)

(*'F13' No 333 later Power class A)

The massive appearance but indifferent performance of the Drummond 4-6-0 classes has been mentioned and their introduction commenced with these six engines (five of the 'E14' class had in fact been authorised). The layout of the cylinders strongly suggests that it was the double-singles that were transformed in the new six-coupled classes rather than the well tried inside cylinder four-coupled classes. Walschaerts valve gear was used for the outside cylinders, instead of the Joy's used on the 'T7' and 'E10' engines, but like them the inside cylinders had Stephenson link motion. The valve gear was massive in construction and unusually the adjacent cranks were set at 90° instead of 180°. As usual, a steam reverser was fitted. The boiler was larger than anything so far seen on the South Western and being pitched at 9ft had the effect of giving a mammoth aspect, particularly because of the shorter chimney and small dome. The cab remained pure Drummond in shape but the roof had to be arched highly. Other equipment was the inevitable firebox water tubes, and 'Water Cart' tender with feed water heater and feed pumps.

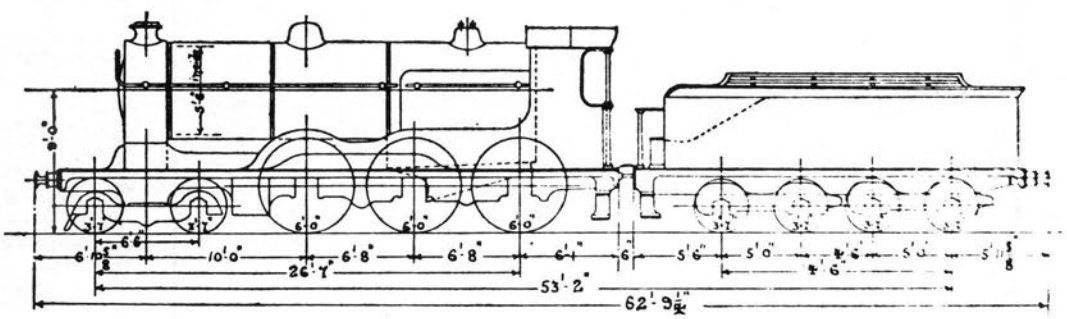
Five engines were built at Nine Elms, as the 'F13' class, Nos 330-4 in 1905 and the other also built at Nine Elms, was an 'improved' version, 'E14' class No 335 of 1906; the latter differed only in the cylinder dimensions and revised Walschaerts valve gear with piston valves for the outside cylinders. The tender built for this engine was fitted with water pickup gear (soon removed) in anticipation of water troughs which were never laid down.

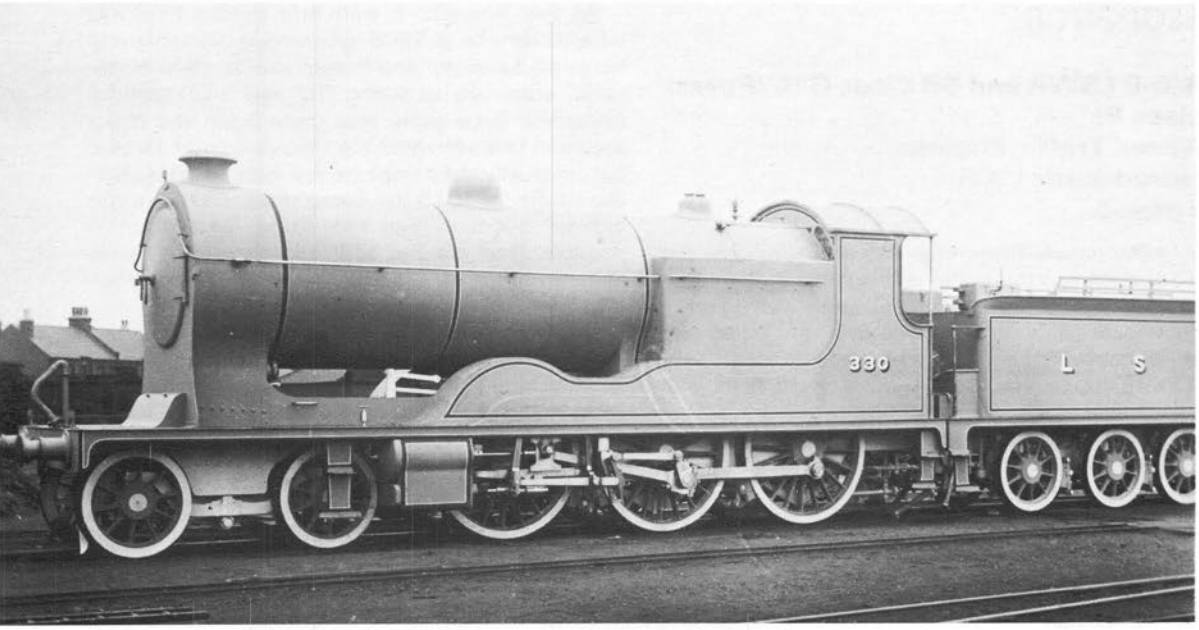
Despite an initially encouraging series of trials, steaming problems caused considerable difficulties, arising from the length of the firebox, coupled with its reduced volume because of the water tubes, which firemen found impossible to fire, being used to short deep boxes. Lubrication of bearings was inadequate and in order to give sufficient bogie wheel clearance the outside cylinders had to be only partially supported around their periphery so that they worked loose continually. For about a year Drummond persisted with their use on expresses but then even he had to accept the inevitable and they were relegated to goods trains between Salisbury and Exeter. Even on these they had to be flogged to get uphill, they could not run down the banks and on the flat it seemed that nothing could get them moving! No 335 proved to be a most extravagant 'coal gobbler', justifying its title of the 'Turkey'! In September 1912 it was laid aside, pending modification by Drummond, but it fell to Urie to replace it by a new engine of his own design, condemnation and rebuilding following in 1914, but in reality its successor ('H15' Class) was new.

Nos 330-4 continued to work on goods, with periods of storage, and in a final effort to see what could be done No 333 was later fitted with a superheater and extended smokebox, but the results were no better and all five were condemned by the Southern Railway in 1924.

First of class withdrawn: 'F13' 331 (2/1924); 'E14' (6/1914)
Last of class withdrawn: 'F13' 334 (10/1924)
None preserved

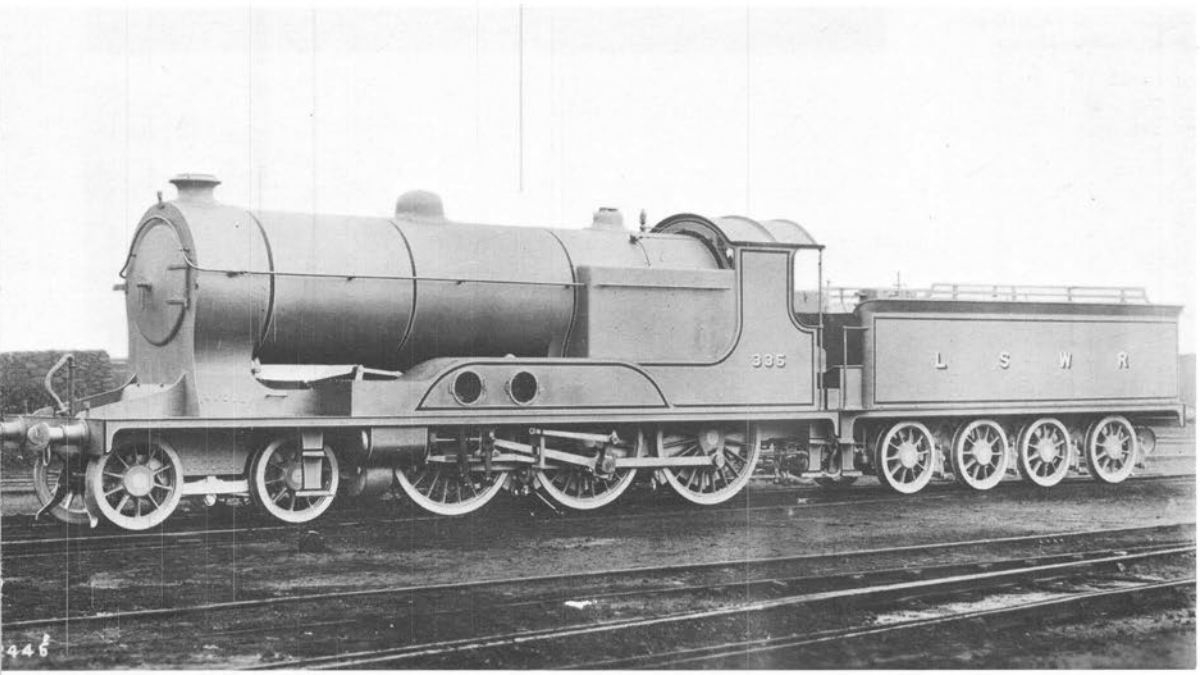
Below: Outline drawing of the Class F13 four cylinder express engine design of 1905.





Above: Huge but sluggish! The massive lines of Dugald Drummond's first 4-6-0 locomotive, the Class F13 introduced in 1905. The first engine built No 330 is seen here in workshop grey finish, when new. *LPC*

Below: The 'improved version' of the 'F13' class, designated the E14 Class; No 335 of 1906. Pictured here in workshop grey finish, the locomotive was very similar in overall appearance to Nos 330-334 except for the two 'porthole' glass inspection covers in the big driving wheel splasher, which was itself of a different outline. *LPC*

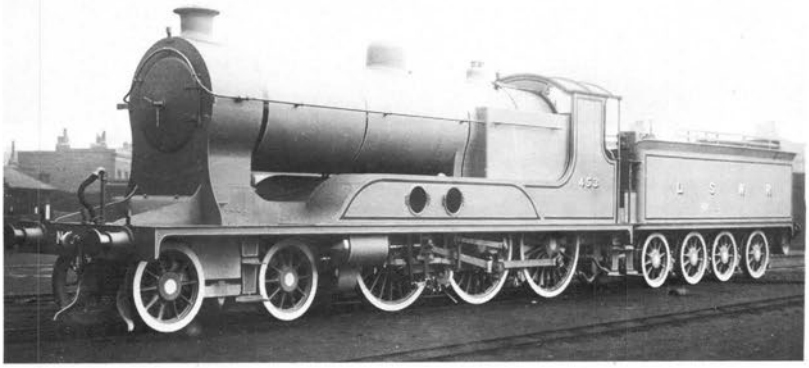


4-6-0 LSWR and SR Class G14 (Power class B)
Mixed Traffic Engines
Introduced: 1908
Total: 5

In many details these engines were similar to the 'F13' class but the boiler was smaller in diameter; however appearances were deceptive as the centre line was at the same height. An important difference was the fitting of a steam drier. Like No 335 the 'Water Cart' tenders were built with water pickup gear, soon removed.

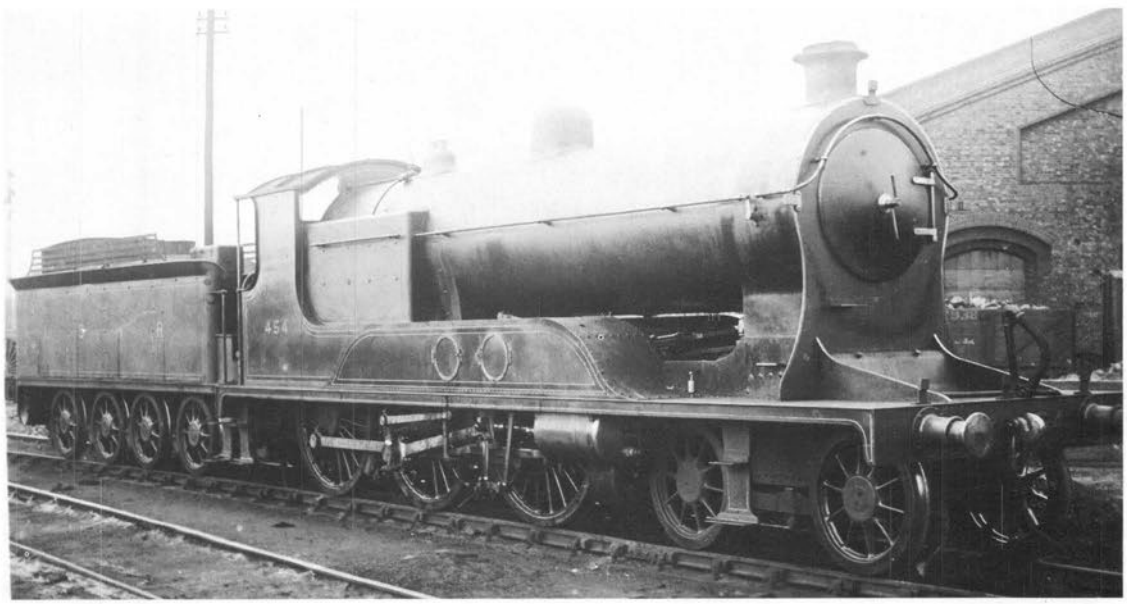
All five, Nos 453-7, were built at Nine Elms and entered service in 1908, performing tolerably well between Salisbury and Exeter, but on only exceptional occasions bettering 'T9' and 'L12' running. Firing the large grate was once again the major problem. Urie removed the feed pumps in 1914-6 but unusually they retained the heat exchangers in the tender. In 1915 the fitting of superheaters was ordered, but none was ever fitted, for as soon as possible after the end of World War 1 they were put into store. Finally they were used only when absolutely necessary.

All withdrawn January 1925
None preserved



Right: 'G14' class No 453 in photographic grey livery at Eastleigh in 1908. *LPC*

Below: The smaller boiler of the 'G14' class mixed traffic 4-6-0s allowed for a more elegant chimney and dome to be fitted; in many other details they resembled the earlier 'F13' and 'E14' class locomotives. No 454 was photographed on 15 April 1919. *Ian Allan Library*



SECTION 27

0-4-0T LSWR and SR Class K14 (later 'B4') (no power classification); BR 0F (later 1F)
Dock Shunting Engines
Introduced: 1908
Total: 5

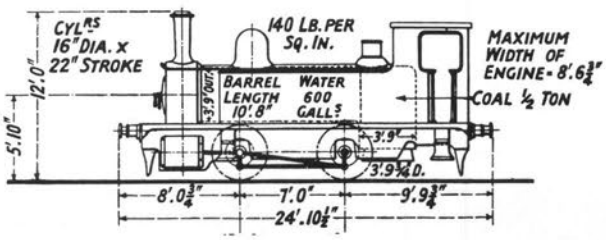
Drummond's dock shunter was slightly smaller than the Adams 'B4' class and sufficiently different to rank as a seperate class untii, in 1912, the 'K14' identity was abolished and they were taken into the 'B4' class. Despite their smallness the type had proved useful as station pilots so they had vacuum ejectors and brake valves for vacuum braked stock, although only a handbrake for the engine. When spare boilers were needed the Adams type was perpetuated by the Southern and ultimately only No 147 of the five retained a Drummond boiler throughout.

For many years engines working regularly at Southampton Docks were named by the dock's engineer and often did not show a number in the standard LSWR style; thus Nos 746/7 (later Nos 101 and 147) were named *Dinan* and *Dinard* respectively, the latter having only a bufferbeam number, the former nothing, but after 1933 numbers were shown. After withdrawal No 147 was sold and finished its days in Monmouthshire at Blaenavon, being named *Blaenavon* and scapped in 1958. All five were renumbered by British Railways.

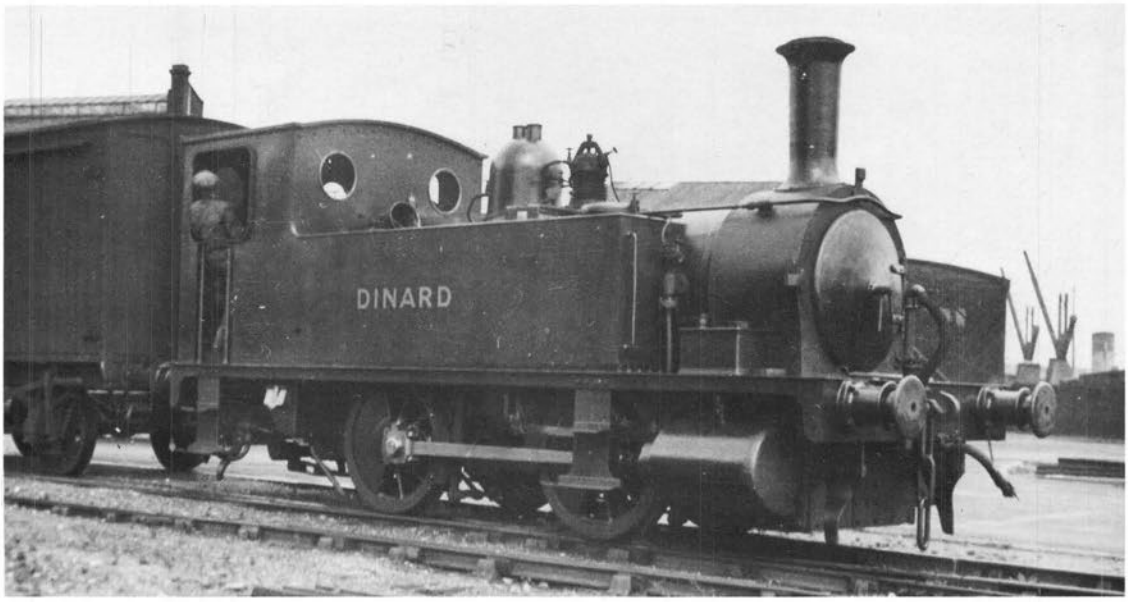
Nos 82-4 and 746/7 (renumbered 101/47 in 1922) were all built at Nine Elms in 1908.

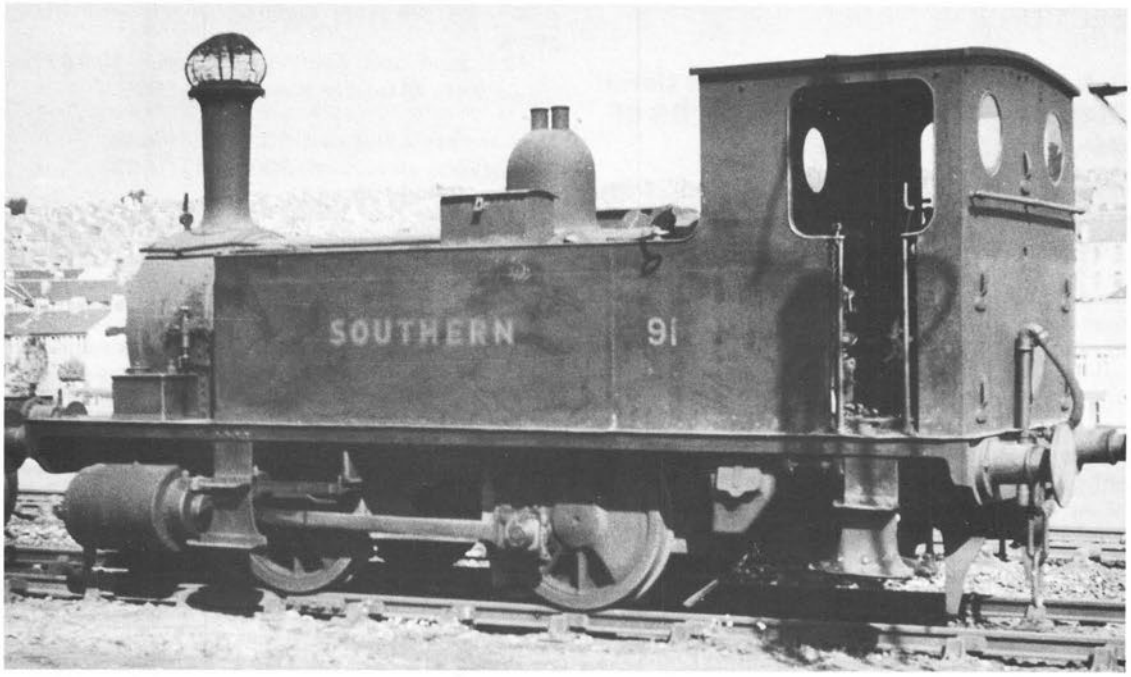
First of class withdrawn: 30101 (11/1948)
Last of class withdrawn: 30083 (11/1959)
None preserved

Below: Outline drawing of Class K14 (reclassified B4) 0-4-0T in latterday condition with an Adams-type boiler in place of the Drummond original. The Drummond engines were introduced in 1908.



Bottom: Class K14 (later B4) 0-4-0T *Dinard*, at Southampton Docks. Note the lack of a number painted on either the engine's side or the bufferbeam. (It was No 747 on the LSWR list.) The device ahead of the dome, on the boiler top is a filtrator in which a linseed colloid was fed into the boiler to convert salts in the water into a sludge. *Ian Allan Library*





Above: In postwar black livery, Class B4 0-4-0T No 91 was photographed at Plymouth Friary shed, fitted with a spark-arresting chimney and still carrying a Drummond boiler. *S. C. Townroe*

Below: The 'B4' tanks were useful little engines and survived into BR ownership. No 30084 is seen here receiving some attention from the driver during shunting duties at Dover Marine on 22 April 1953. *W. A. Corkill*

SECTION 28

4-6-0 LSWR and SR Class P14 (Power class B)
Mixed Traffic Engines
Introduced: 1910
Total: 5

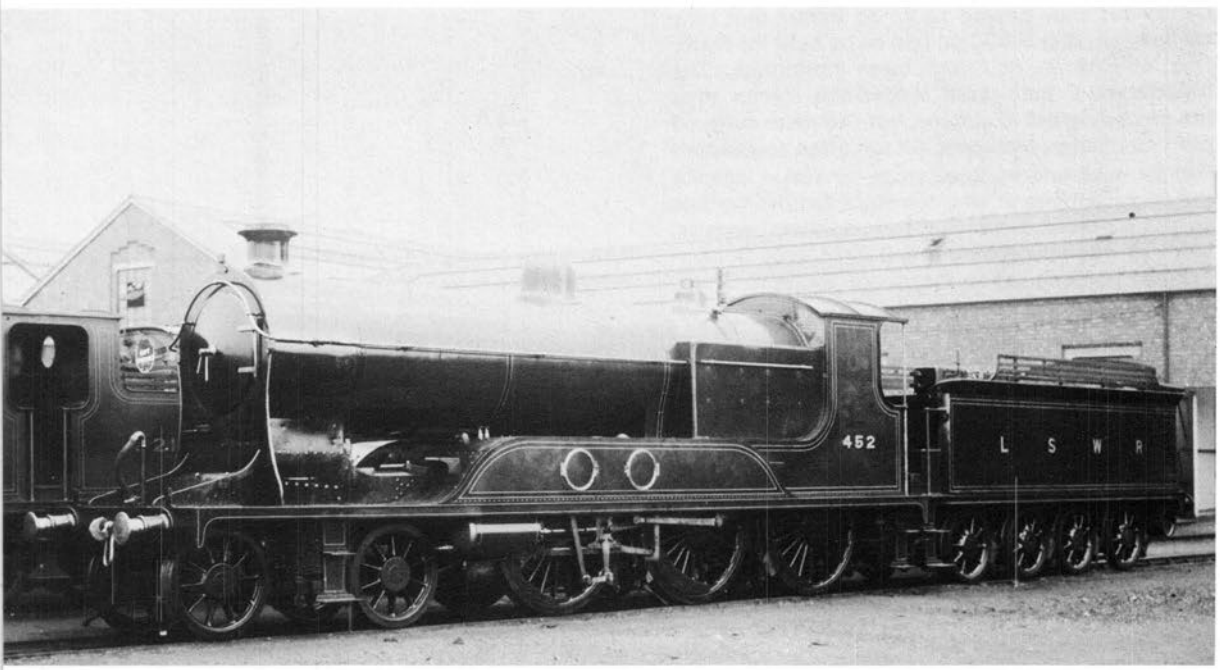
The modest success of the 'G14' class encouraged the construction of more similar machines in which the principal change was a longer wheelbase, extended by eight inches. They had all the usual features, with the addition of piston valves and steam driers. In service, particularly in the hands of Exmouth Junction men, they were superior to the 'G14' class but still not better than any of the four-coupled engines — their appetitie for coal earned them the nickname of 'Big Gobblers'. Just like the 1908 engines little use was made of them after 1920 as it was ordered that all 10 'G14' and 'P14' engines should be rebuilt into Urie's 'H15' class.

Superheating was intended in 1915 but none was altered until No 449 was so fitted in 1922, getting also an extended smokebox, but as before there was no resultant improvement. After the others had been condemned in 1925 this engine was retained for trials by Maunsell, prior to the construction of his 'Lord Nelson' class, when, for comparative purposes, the crank settings were altered to 135° to give eight beats per revolution. In this form the engine was placed on the duplicate list, becoming No 0449 in 1925, and after condemnation its boiler proved useful being used on engines of the 'T14' class (section 29) until 1945.

All five engines were built at Eastleigh, Nos 448-50 in 1910 and Nos 451/2 in 1911.

First of class withdrawn: 448/50-2 (1/1925)
Last of class withdrawn: 0449 (10/1927)
None preserved

Below: The Class P14 development of the G14 mixed traffic 4-6-0 design, introduced in 1910, with piston valves and longer wheelbase. Only five were built and they proved only marginally superior to the G14s, being very heavy on coal. No 452 is illustrated. *Ian Allan Library*



4-6-0 LSWR and SR Class T14 (Power class B); BR 4P
Express Passenger Engines
Introduced: 1911
Total: 10

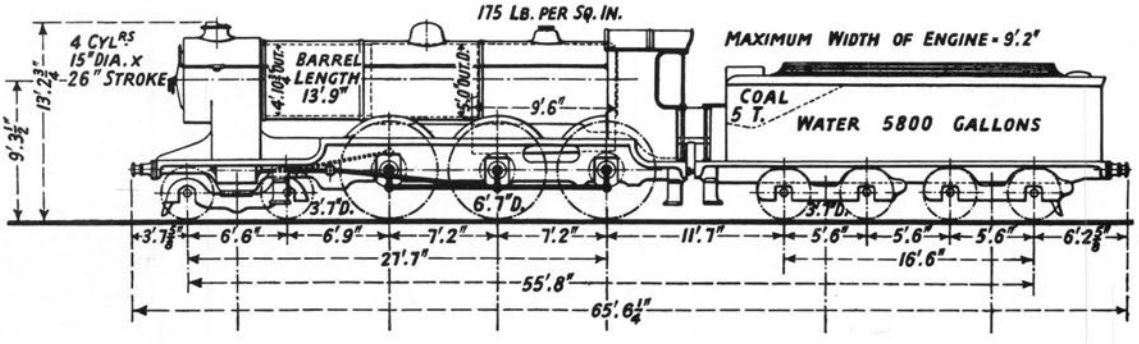
The 4-6-0 classes described so far were built for the West of England traffic and it was not until the summer of 1910 that six-coupled express engines were authorised for the Bournemouth services. As before the four-cylinder layout was used, but in this case they were placed in line under the smokebox. The coupled wheels were increased to 6ft 7in in diameter, and the wheelbase was altered to suit. The boiler used was that fitted to the 'G14' and 'P14' engines, six (Nos 447/58-62) having steam driers, but being pitched 3½in higher gave the class an even more massive appearance. A wide casing was fitted which spread over the outside cylinders and swept up to the sides of the smokebox, giving rise to the name 'double-breasters' but later the better name of 'Paddleboxes' became general, arising from the huge continuous splashers which reminded so many of the Isle of Wight steamers used on holiday trips to 'The Island'; which at that time were paddlesteamers.

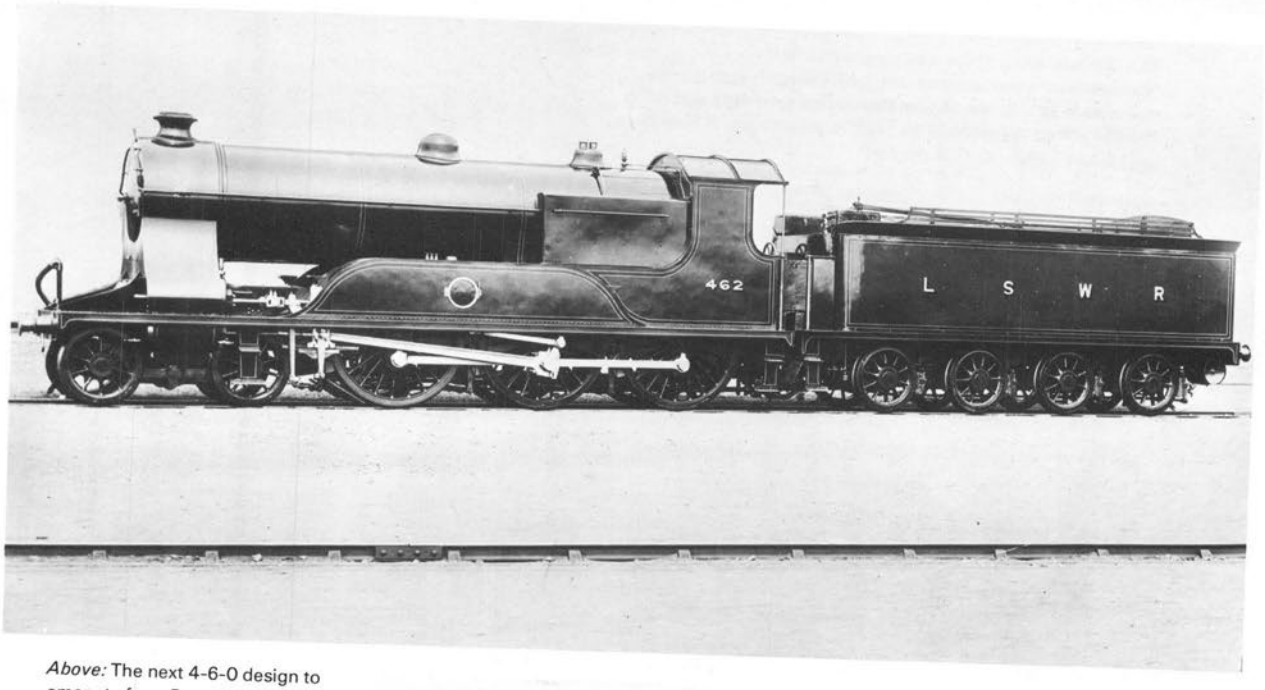
At first these engines had 4,500gal 'Water Carts', but they proved to be so thirsty that new tenders carrying 5,800gal had to be built for them; Nos 459/62 in fact had them from new. The 'Paddleboxes' performed measurably better than the preceding 4-6-0 classes, but like them suffered from lubrication problems. All too often enginemen had to make unscheduled stops for water, despite the larger tenders. A smartening of express timings in 1913 proved somewhat beyond their capacity, although the succeeding 4-4-0 'D15' (see Section 30) had no difficulty on that score. Alone of Drummond's big six-coupled engines Urie came to the conclusion that the 'Paddleboxes' could be improved and in 1915-8 they were fitted with superheaters, losing the Drummond gadgetry; some success was attained as the number of hot boxes was reduced and coal and water consumption brought down. Even so steaming remained somewhat temperamental, but improvement was obtained in a curious way when in 1940 No 447 was given a short stovepipe chimney of Urie's pattern due to materials shortages, the result being something of a transformation! All except No 458 were similarly altered; this engine was a wartime casualty, being damaged beyond repair by bombing at Nine Elms shed in 1940. Only three were renumbered by British Railways becoming Nos 30446/7/61.

All 10 were built at Eastleigh, Nos 443-7/58 in 1911 and Nos 459-62 in 1912; No 459 was to have been No 463, but '700' class No 459 was renumbered (see section 18) in order to allow consecutive numbering of the second batch.

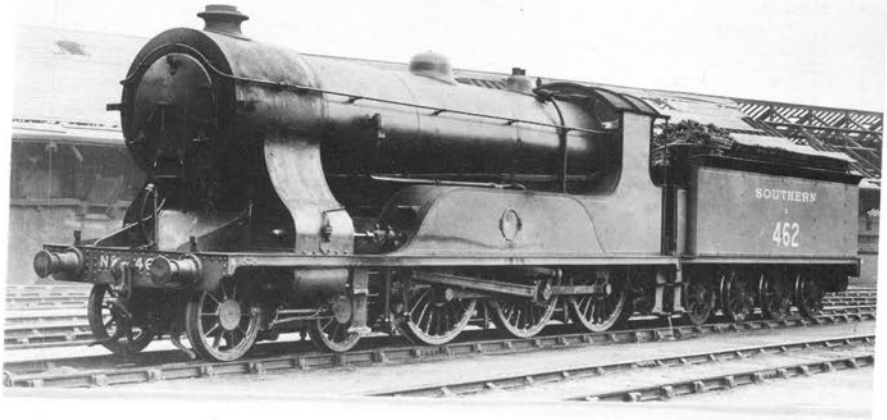
First of class withdrawn: 458 (10/1940)
Last of class withdrawn: 30461 (6/1951)
None preserved

Below: Outline drawing of the Class T14 4-6-0 for express passenger duties, as superheated.

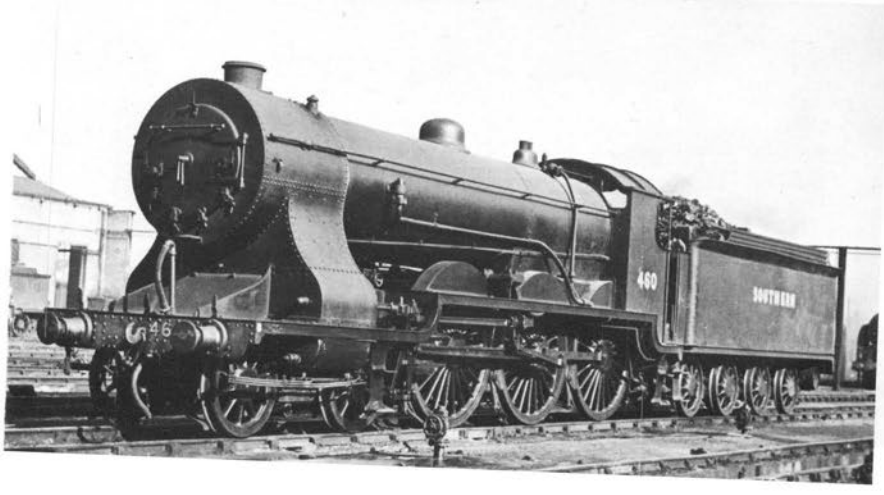




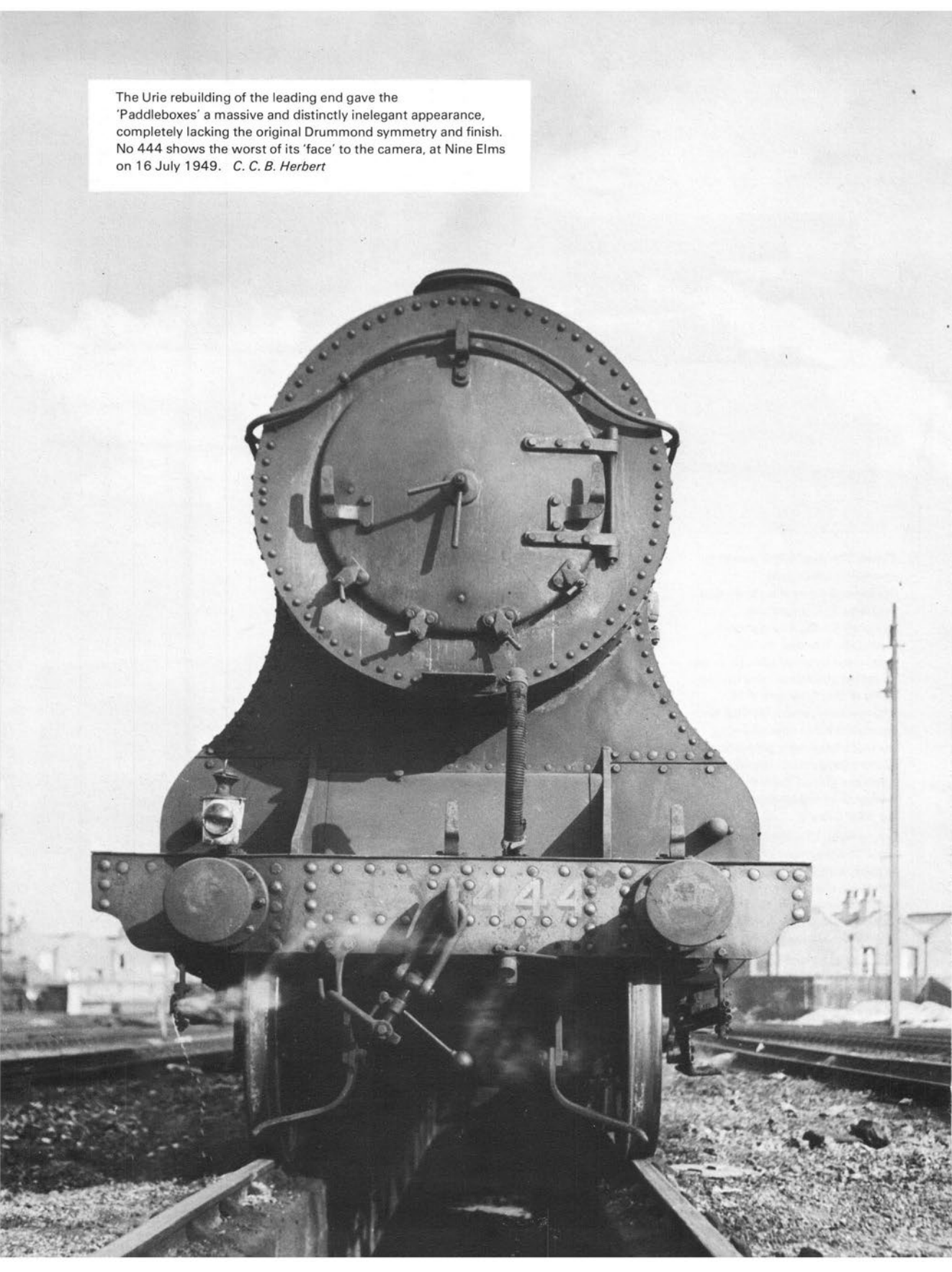
Above: The next 4-6-0 design to emanate from Dugald Drummond's inventive brain was the Class T14 specifically designed for the Bournemouth expresses. The four-cylinder layout was retained (placed in line under the smokebox) and the big boiler of the 'G14' and 'P14' engines was carried. No 462 is illustrated when new, showing the quite handsome proportions of the class as built. The big splashers gained them the nickname of 'Paddleboxes'.
Ian Allan Library



Centre right: Urie liked the Class T14 engines sufficiently to fit them with superheaters in 1915-18, giving them an extended smokebox. No E462 is seen in early SR days; minus the firebox water tubes. *LPC*



Bottom right: Further rebuilding of the Class T14 'Paddleboxes' rid them of their distinctive splashers and gave them a curiously primitive stovepipe chimney (which however, apparently improved their ability to steam!) No 460, in postwar SR black livery, shows well the final look of these steam mammoths.
Ian Allan Library



The Urie rebuilding of the leading end gave the 'Paddleboxes' a massive and distinctly inelegant appearance, completely lacking the original Drummond symmetry and finish. No 444 shows the worst of its 'face' to the camera, at Nine Elms on 16 July 1949. *C. C. B. Herbert*

SECTION 30

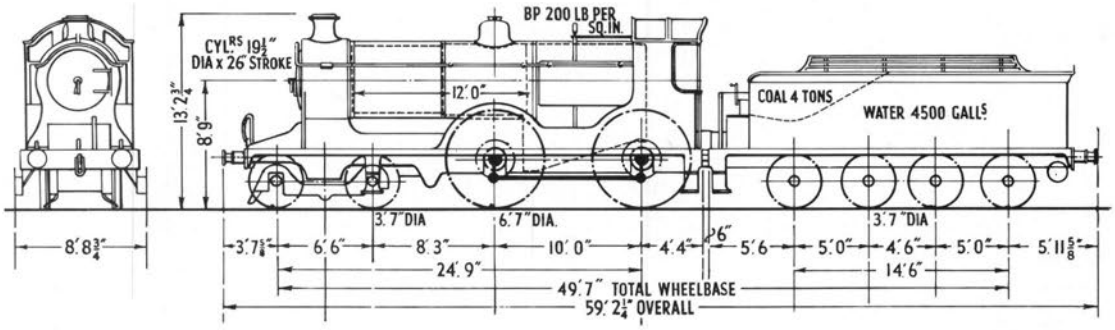
4-4-0 LSWR and SR Class D15 (Power class D); BR 3P
Express Passenger Engines
Introduced: 1912
Total: 10

Dugald Drummond's last design appeared in 1912 and was a substantial enlargement of his previous 4-4-0 types, to which he wisely returned after the rather dismal failures of his large six-coupled engines. In so doing he achieved a worthy success and the 'D15' class set a noteworthy finalé to his locomotive engineering career. In order to obtain the desired tractive effort the cylinders were enlarged to a diameter of 19½in, making it necessary to use Walschaerts valve gear so that bearing sizes were adequate; the inside motion drive 10in diameter piston valves. The boiler was a variant of that used to reboiler the double-single No 720 in 1905, having the same barrel, but with a redesigned firebox having a sloping grate. Naturally Drummond fitted firebox water tubes. The tenders, which were the 4,500gal 'Water Carts' displaced from the 'T14' class, had feed water heat exchangers, and of course there were duplex pumps. Additionally steam driers were fitted, and a steam reverser. Superheating was applied early in their life, replacing the steam driers in 1915-7.

An instant success, they were put on to Bournemouth and Salisbury expresses, proving to be free runners, easily doing jobs that taxed the six-coupled engines and they were regarded as 'two coaches better' on the level. West of Salisbury the nature of the road did not prevent the drivers from showing just what a fine engine they had in the 'D15' class. No 470 ran as an oil burner in both 1921 and 1926. When displaced from Bournemouth line trains in 1925-6 by 'King Arthurs' the 'Water Cart' tenders were transferred to other Drummond classes, six-wheeled tenders from the '700' class being substituted. Then the class performed well on direct Portsmouth line trains, although in fact timings were not too severe, until displaced to lesser duties when that line was electrified in 1937. No 463 was converted to an oil burner in 1947 and never ran again when the scheme was terminated abruptly and it was the only engine in the class not renumbered by British Railways. The final main line work of the class was on Waterloo to Lymington trains.

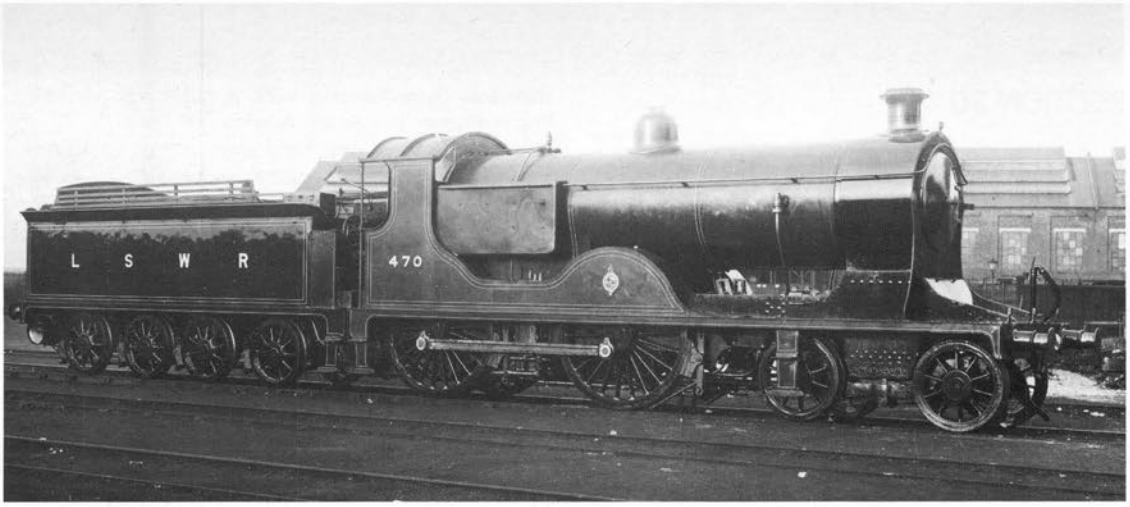
All 10 engines, Nos 463-72, were built at Eastleigh in 1912.

First of class withdrawn: 463 (12/1951)
Last of class withdrawn: 30465 (1/1956)
None preserved



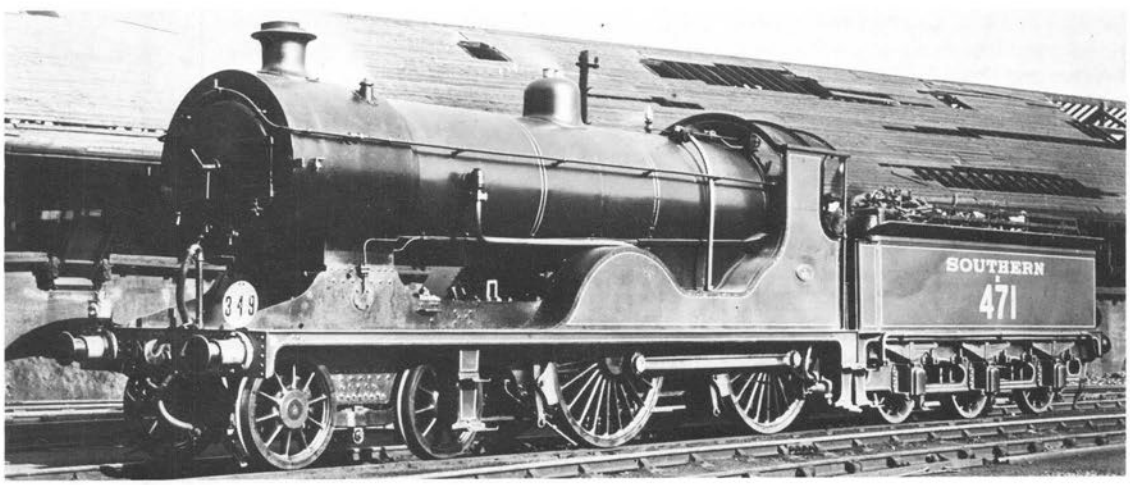
Above: Outline drawing of the Class D15 4-4-0; introduced in 1912.

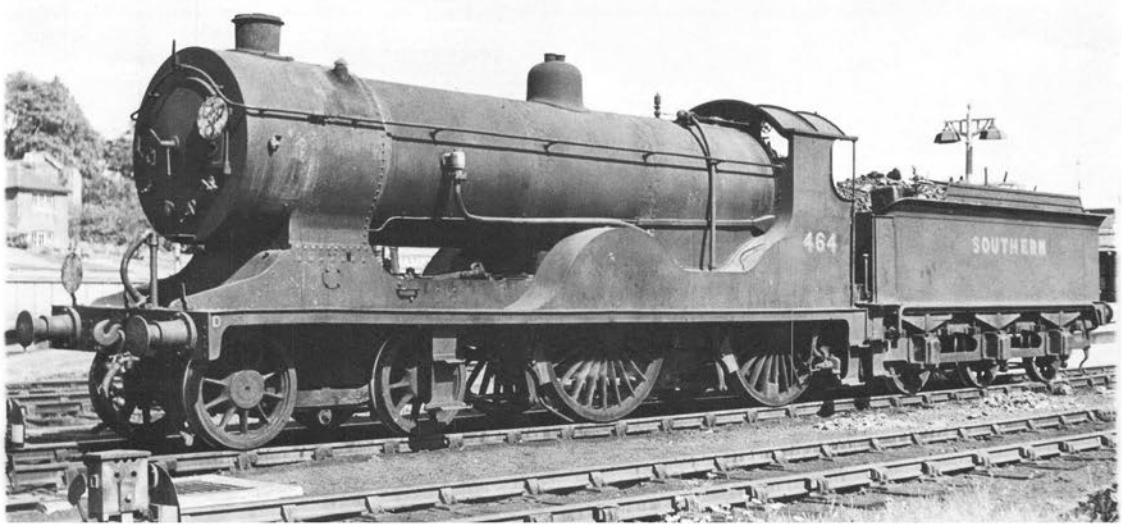
Left: Without question, one of the classics of British steam locomotive design. Dugald Drummond's big Class D15 express passenger 4-4-0 design, introduced in 1912, and his last design for the LSWR. No 465 is illustrated, built at the new Eastleigh works (created by Drummond) in 1912.
Ian Allan Library

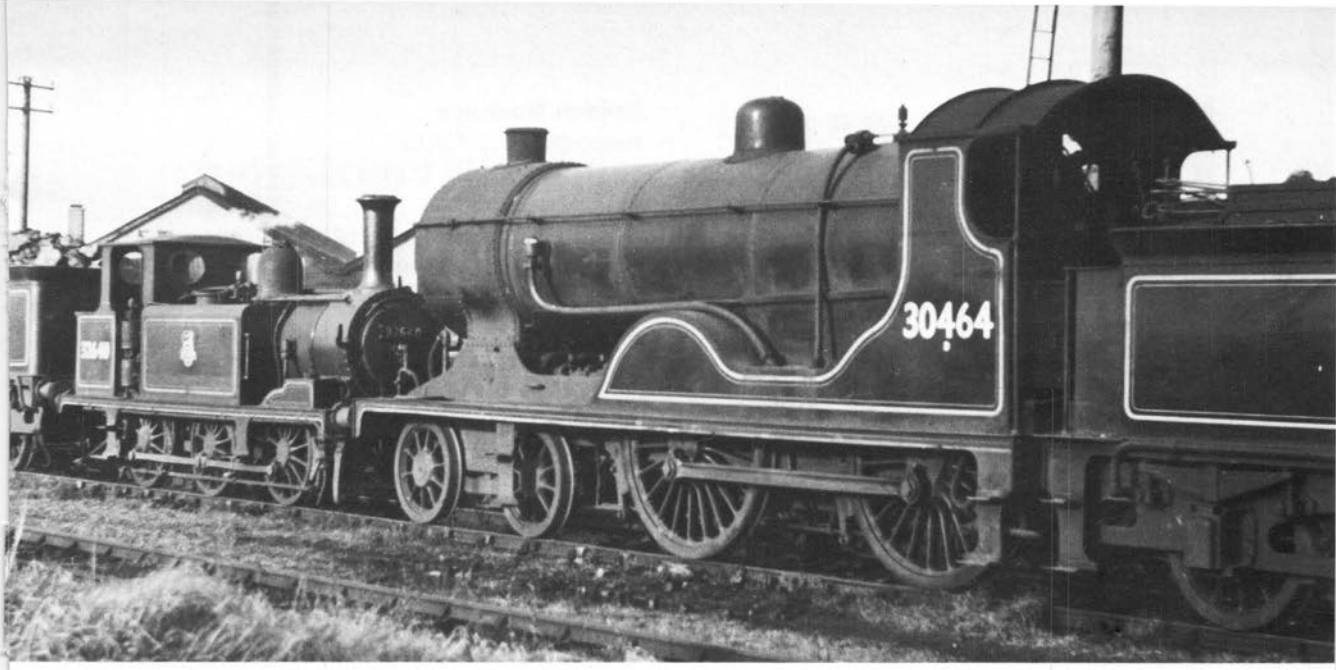


Above: Fresh from intermediate repair (note that the smokebox has been freshly painted but *not* the rest of the engine) and attached to a newly painted 'Water Cart' tender, Class D15 4-4-0 No 47 is seen at Eastleigh. *Ian Allan Library*

Below: When the new 'King Arthur' Class 4-6-0 engines displaced the Drummond D15 class from the Bournemouth and Salisbury expresses, the engines (by then superheated by Urie) were given six-wheeled tenders in place of the 'Water Carts', and used on the Portsmouth Direct line. No E471 is seen in this condition, in fully lined green livery. *LPC*







Left: The drab black paint of wartime and early postwar days, and the infrequent attention of the cleaners did not enhance the appearance of these big 4-4-0 locomotives, and the stovepipe chimney gave them an austere air. No 464 was photographed at Southampton Central in August 1947. *Frank F. Moss*

Top: The sheer bulk of the Class D15 engines is well portrayed, in this comparison with the diminutive lines of the ex-LBSCR Stroudley 'Terrier' No 32640, adjacent. The 4-4-0 and the 'Terrier' are both in lined-black BR livery, and are seen on shed at Eastleigh on 2 February 1952. *A. G. Cooper*

Above: A final BR express duty for the surviving Class D15, (and a favourite with 'train-spotters') was the Waterloo-Lymington Pier boat train service, seen here loaded to 10 bogies. No 30465 makes a stirring sight as it pounds along the track, passing Surbiton on 18 June 1955, with the 8.45am working. It was the last of the class to be withdrawn, in the following January. *J. N. Faulkner*

Steam Railcars and Motor Train Engines

SECTION 31

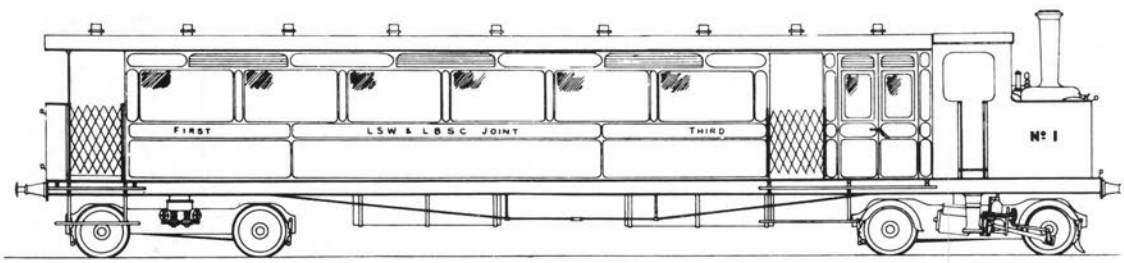
As the local electric tramways were developed, and affected the railway's earnings from local traffic, Drummond attempted to meet the competition by producing the first steam railcars to operate in Britain since William Bridges Adams' *Fairfield* ran in 1847. Three types were produced in 1903-6 and as they were not altogether satisfactory he followed these up with two types of 'miniature' engines; alas they were even less successful.

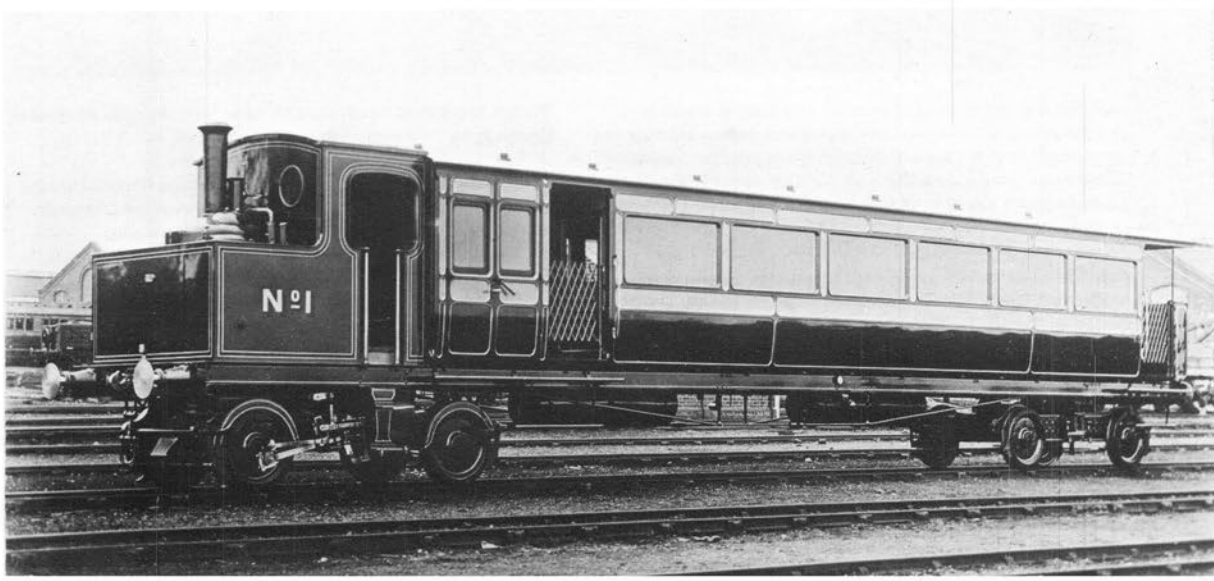
Below: Outline drawing of Class K11 steam railcar, as built in 1903.

Bottom: The first of the Drummond steam railcars, jointly owned by the LSWR and the LBSCR, No 1 of the 'K11' class, with vertical boiler, built in 1903. Note the extremely lightweight trailer bogie and the primitive iron concertina gates.
Ian Allan Library

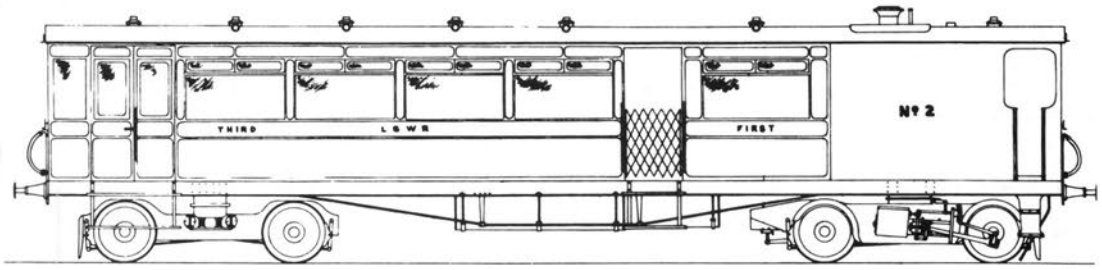
Steam Railcars
Introduced: 1903
Total: 2 ('K11'), 2 ('H12'), 13 ('H13')

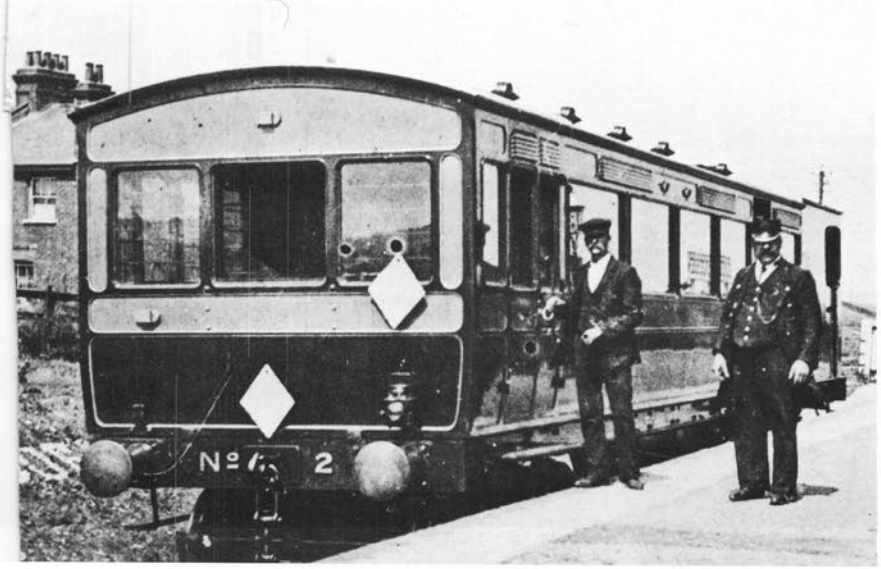
The first two cars built in 1903 ('K11' class) were in fact the joint property of both the LSWR and LBSCR and used on the joint line between Fratton and Southsea. When new the first was lent to the GWR for trials between Stroud and Chalford as a prelude to that railway building up a fleet of no less than 99 cars. The appearance of these two was almost ludicrous, with the diminutive boiler and tall slender chimney and open access to the saloons, as shown in the illustration. It was soon found that the boiler was quite incapable of providing anywhere near enough steam when the car was fully laden and enquiries revealed that the trials, which appeared to be entirely satisfactory, had not included tests when fully laden or at the foot of inclines, let alone actually on them! Thus it was necessary to fit new boilers in 1903-4 which were more conventional than the vertical type used at first. Even then assistance was sometimes needed. The Southsea line closed on the outbreak of war, in 1914, and the two were never used again, being condemned in 1919. The carriage portion of these vehicles was painted in the LBSCR livery of





Below: Rebuilt with a larger boiler in 1904, the pioneer Class K11 railcar No 1 of the joint LSWR/LBSCR service, used between Fratton and Southsea, is seen again. *LPC*





Above: Outline drawing of Class H12 steam railcar No 2, introduced in 1904.

Left: Steam railcar No 2 of Dugald Drummond's LSWR Class H12, built at Nine Elms in 1904 for use on the Basingstoke and Alton line, with the engine portion (furthest from camera) enclosed in a metal cladding.
LGRP, courtesy David & Charles

chocolate and cream and the engine part in LSWR green.

The next two cars were built for the Basingstoke and Alton line and the engine portion was reversed so that the boiler stood over the second axle and the firebox and footplate at the outer end, but it was still the leading axle that was driven. This part of the vehicle was enclosed in a very plain metal box, but the car itself showed a slighlty less antiquated shape. The design was further developed when Nos 3-15 were built, having the engine unit fully enclosed within the carriage body, but the engine arrangement itself was not changed. All these cars, unlike the two joint cars which had handbrakes only, were vacuum fitted, and lit by gas. To communicate between the two driving compartments there was an electric bell system.

The services worked by the LSWR cars were in the Twickenham, Bournemouth, Exeter and Plymouth areas and such branches as Bodmin to Wadebridge, Whitchurch to Fullerton and Basingstoke to Alton at various times until almost all stopped working in 1916, the remainder lasting until 1919. Two sets of numbers were used, one for the engine, the other for the coach (Nos 4201-15) which soon became the standard identity, and after condemnation of the engine portions they were used as push and pull trailers for many years.

The cars were built as follows:

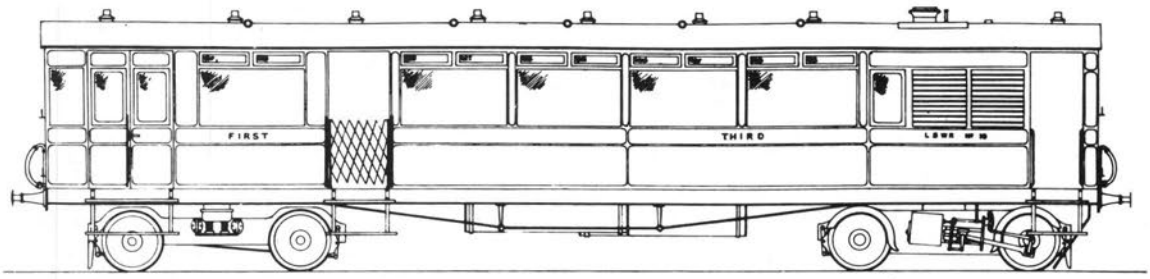
Nos 1, 2* (K11)	Nine Elms	1903
Nos 1, 2 (H12)	Nine Elms	1904
Nos 3-6 (H13)	Nine Elms	1905
Nos 7-15 (H13)	Nine Elms	1906

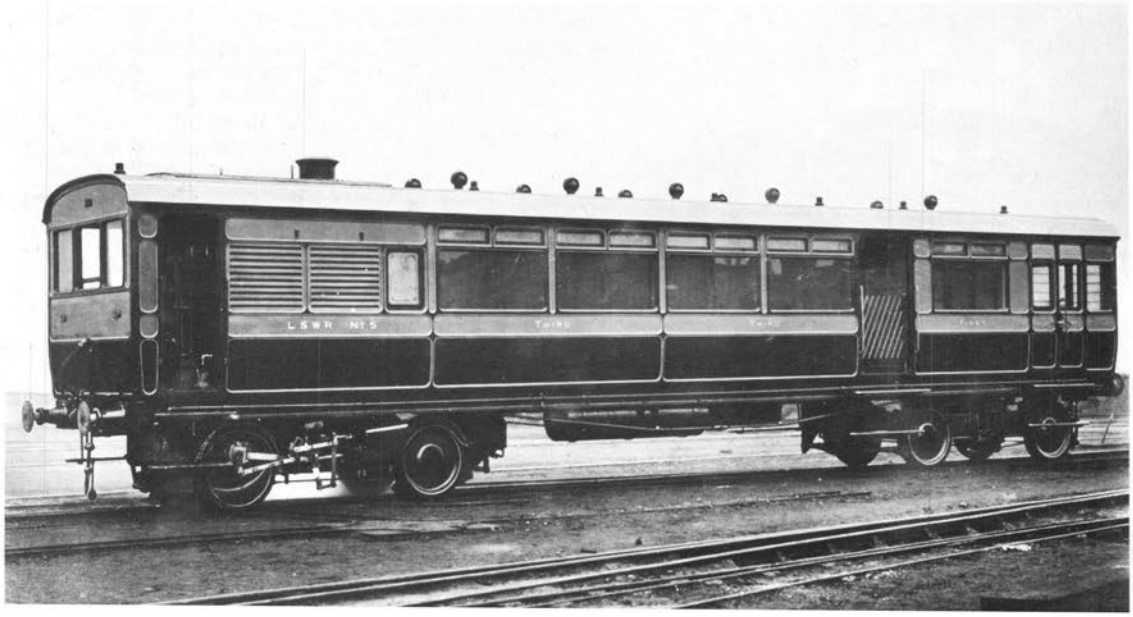
*Joint line cars

First of class withdrawn: 'K11' 1 &2 (9/1919) 'H12' 1 and 2 (11/1916); 'H13' 5-9, 11-5 (11/1916)
Last of class withdrawn: 'H13' 3, 4, 10 (7/1919)
None preserved

Below: Outline drawing of the Class H13 steam railcars (No 10 illustrated) introduced in 1905.

Bottom: The Class H13 steam railcars, first produced in 1905 at Nine Elms, and given the numbers 3-15, were of more sophisticated appearance and had the engine portion inside quite an elegant extension of the carriage body. Standard LSWR brown and salmon pink livery, with white roof and black bogies and underframes. *LPC*





Motor train Engines

The railcars soon revealed their disadvantage of lack of flexibility, at times of extra traffic and of immobilisation, when engine repairs held the cars out of use. A new approach was tried with a separate small engine specially designed for 'push and pull' trains. Their diminutive size earned them the title 'Potato Cans' and they appeared in two versions, 'C14' and 'S14', as follows:

Version one
2-2-0T (some later 0-4-0T) LSWR and SR Class C14; BR 0F (later 0P)

Introduced: 1906 (0-4-0T 1913 by rebuilding)
Total: 10 (4 converted to 0-4-0T)

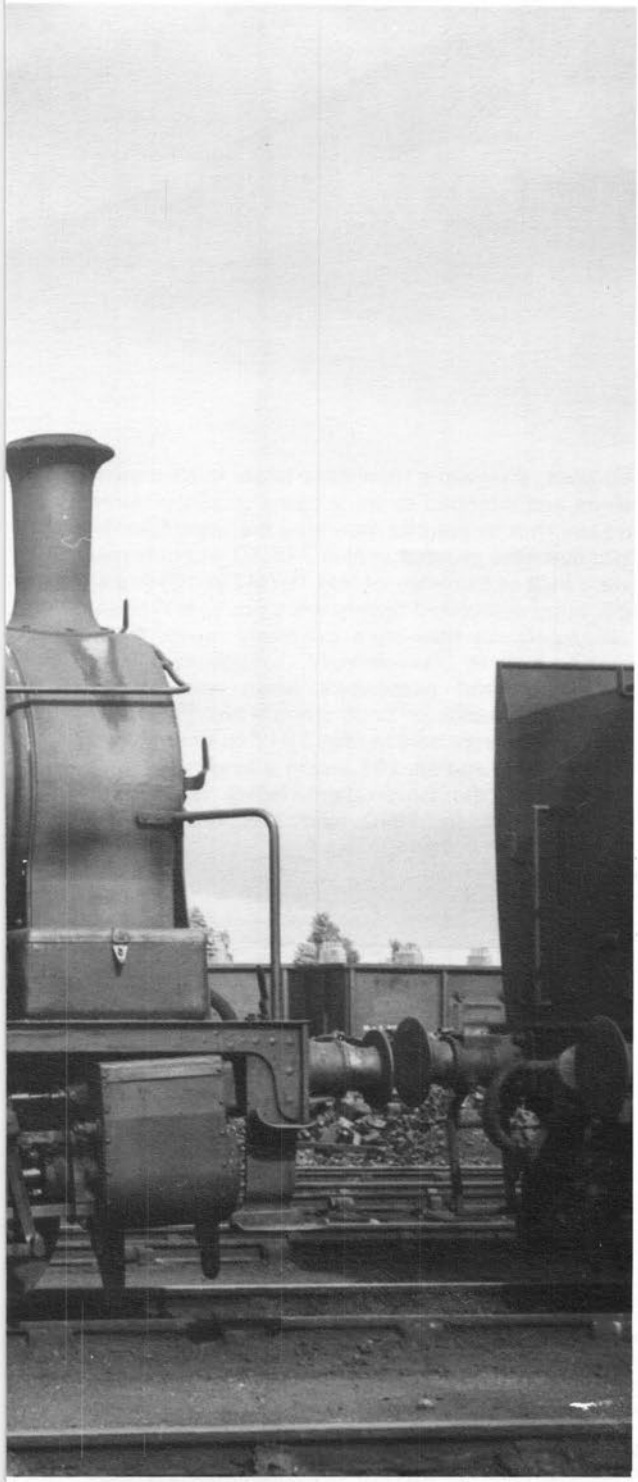
These engines were to all intents the power unit of the steam railcars but finished in 1906 at Nine Elms as complete locomotives, and in the same way they suffered from lack of adhesion, despite which they worked on similar services. The idea was sound enough but they were far too small for the work expected of them, proving quite incapable of moving a single full trailer, let alone a seocnd vehicle, at busy times. By 1911 they were mostly displaced from passenger work and some found use as light shunters at Southampton, Dorchester and Winchester. Then in 1913 it was decided that four should be rebuilt as coupled engines and that the others should be sold. Thus Nos 743 and 745 were rebuilt in 1913, but Nos 741 and 745 had to wait until 1922-3 for alteration. World War 1 gave an opportunity to dispose of the surplus engines and Nos 736-40/2 were sold in their original form and No 743 as rebuilt to the Government in 1916-7 for use by the Ministry of Munitions, the War Department and the Admiralty.

Below: Carrying the latterday 'duplicate list' LSWR number 0741, Drummond 2-2-0T (No 741 when built at Nine Elms in 1906) of Class C14, is seen here stored out of service at Strawberry Hill on 1 October 1921. The following year it was converted to an 0-4-0T. *H. C. Casserley*

SOUTHERN
3741

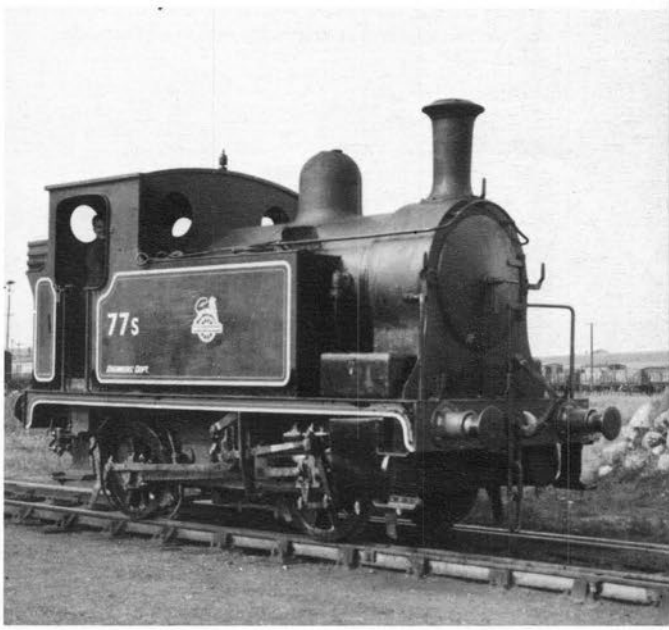
The three survivors became Nos 0741/4/5 in 1918 in the LSWR duplicate list, three of only four Drummond engines so treated in England. No 0745 was used by the Civil Engineer at his Redbridge depot and became No 77s in 1927; the other two eventually became British Railways numbers 30588 and 30589 respectively, having been SR Nos 3741/4, lasting until 1957-9 at Eastleigh, normally working at Southampton docks.

First of class withdrawn: 2-2-0T 740 (12/1916); 0-4-0T 743 (11/1917)
Last of class withdrawn: 2-2-0T 737 (12/1917); 0-4-0T 77s (4/1959)
None preserved



Left: Class C14 0-4-0T No 3741 in postwar black livery with 'sunshine' lettering in yellow and green, photographed at Eastleigh in July 1950. *J. M. Jarvis*

Below: Always a delightful sight for the rail enthusiast was the Redbridge depot shunter, (near Southampton). This was No 77s in the Civil Engineer's Dept stocklist and was formerly No 745 and 0745. Kept beautifully polished as a rule, No 77s sported fully lined BR black livery in her final years of service. Seen here at Eastleigh after repairs. *R. G. Jarvis*

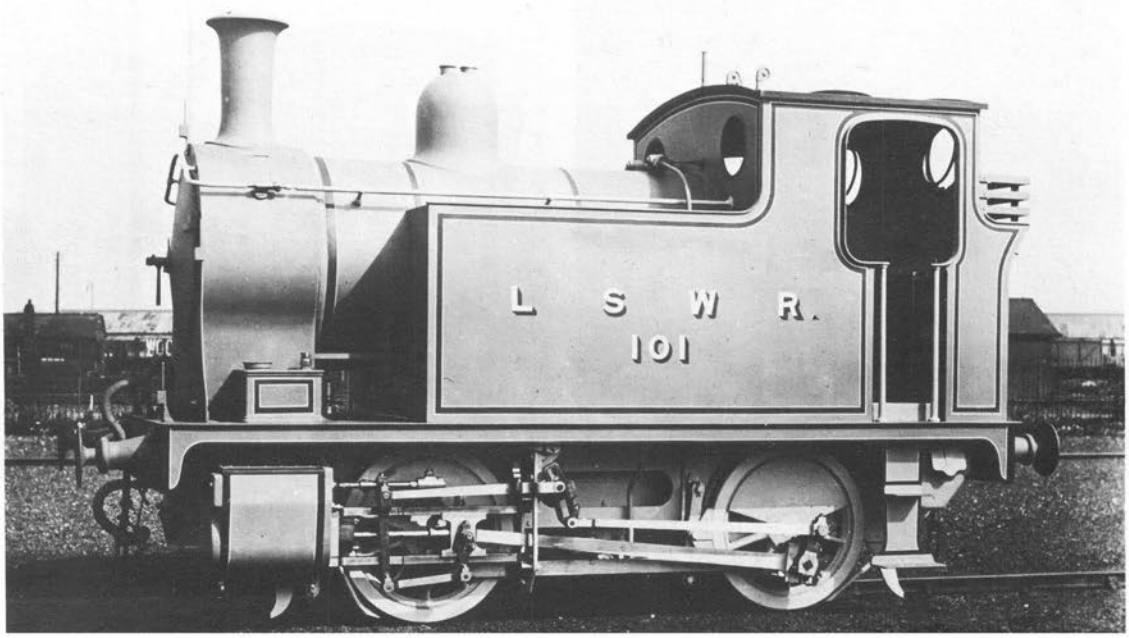


Right: Working bunker-first on an RCTS special over the Bishop's Waltham branch, Class C14 No 30589 (formerly SR No 3744) makes an unlikely comeback to passenger duty on 14 June 1952. *L. Elsey*

Version two
0-4-0T LSWR Class S14
Introduced: 1910
Total: 2

It was to overcome the lack of adhesion that the last of these engines were completed as four-coupled; they were somewhat larger in all dimensions and intended to work trains of two or three trailers, but in practice two was the maximum. In fact five were ordered as Nos 746-50, but only two were built at Eastleigh as Nos 101/47 in 1910, and the other completed boilers were put to stationary use. In service they were extremely rough riders, making them exceedingly unpopular with enginemen and passengers when working the Lymington branch or Bournemouth and Ringwood trains. Both were sold in May 1917 to the Ministry of Munitions and No 101 lasted a long while after disposal by the Government, being repaired at Derby works in 1940 and last recorded at Grangemouth in 1944.

None preserved



Below: Class S14 0-4-0T No 101, one of two built at Eastleigh in 1910. Sold out of service in 1917 to the Ministry of Munitions this locomotive nevertheless survived until the mid-1940s. Note the brackets on the cab roof, to take the cables for motor-train, or push and pull, controls. Photographed in works grey livery, it was the first engine to be completed at the new Eastleigh works. *LPC*

Part Three: Peter Drummond in Scotland 1896–1918

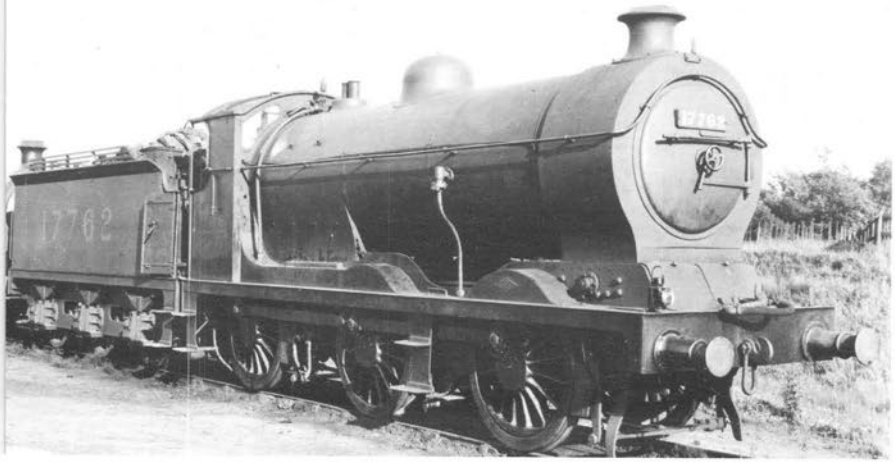
Dugald Drummond's brother Peter was also born in Scotland, in 1850, and in due course 'served his time' with the same Glasgow engineers as his brother, and indeed he trailed behind him for most of his early career. He joined Dugald at Brighton in 1870 and went to Scotland with him in 1875, serving on both the NBR and the CR (moving to the latter in 1882). Peter stayed on the CR when Dugald ventured further afield in 1890, and in 1895 he became Works Manager at St Rollox Works. After one year he moved on to become a chief in his own right, when he was appointed Locomotive Superintendent of the Highland Railway at Inverness, in succession to David Jones. He remained there until 1912 when he joined the Glasgow & South Western Railway, succeeding James Manson at Kilmarnock, where he remained until his death in 1918.

Obviously any ideas of 'PD', as he was so often called, did not come to notice until he gained a position of control and very soon it was seen that he would copy the practices of Dugald — indeed there was little evidence of any inclination to make any innovations of his own until after Dugald's death in 1912. Thus he copied the firebox water tubes, and the feed water heating and pumps, using them in several classes and he produced designs that were exceedingly similar to those built for the LSWR. When the need arose, however, he was able to build something different, as became most apparent at Kilmarnock when 'big brother' was no longer around to be consulted. In those years he dropped immediately the firebox water tubes, never in fact used on the GSWR, and changed over to proper superheating instead of steam driers very quickly. The total numbers of engines built to 'PD's' designs were 72 on the Highland (seven actually ordered after his departure) and 69 on the GSWR (10 being a variation by his successor, R. H. Whitelegg).

More and more details are coming to light of the proposals of various engineers, and the sequence of developing ideas which preceded actually built classes makes a fascinating study of 'might-have-beens'. It is a pleasant conjectural exercise to assess them, forming one's own conclusions about whether or not they would have been better, or worse than those actually built! Luckily something is known of 'PD's' ideas at Lochgorm, for a number of drawings have survived. These Highland proposals are described in the introduction.

Just what the Highlanders thought of the various Drummond contrivances which he inflicted upon them seems to have escaped serious comment; he probably remained as unapproachable as his brother and certainly he retained that characteristic roughness of the Drummonds when he arrived at Kilmarnock, maintaining an overbearing manner and openly expressing contempt of Manson. He built huge engines and ignored all past practice on the railway, in particular by changing the driving position from right to left (the HR was a left hand drive line before his advent). In terms of performance the earlier classes were lethargic and gave immense trouble, being expensive in maintenance. Then a strange thing happened, when after three years a total change took place in him and he became a quiet man, fair in dealing with the men and building engines in total contrast to his earlier designs at Kilmarnock. Curiously it fell to Drummond to fit fusible plugs to the fireboxes of GSWR engines which, just about inconceivable in present day judgement, had not been done before!

In retrospect 'PD' did not have any real effect on the story of the development of British steam locomotive practice, being totally overshadowed in this respect by Dugald, and from that viewpoint to include Peter in this volume perhaps resembles something of an afterthought!



Left: Sadly, Peter Drummond's first design for the G&SWR was not a great success, despite being of the well-tried 'classic' 0-6-0 layout. A big engine, it proved to be extremely sluggish. Class 279 0-6-0 No 17762 is seen here in LMSR days and was originally No 303 (later 83), built by North British in 1913. (See P117). *Real Photographs*

Table 3A

HR Locomotives

CLASS HR/LMSR		Ben/2P		Drummond Goods/3F		Castle/3P
Condition		*As built*	*CR boiler*	*As built*	*CR boiler*	*As built*
Cylinders	**in×in**	18½×26	18½×26	18½×26	18½×26	19½×26
Bogie wheels	**ft-in**	3-6	3-6	—	—	3-3
Driving wheels	**ft-in**	6-0	6-0	5-0	5-0	5-9†
Trailing wheels	**ft-in**	—	—	—	—	—
Heating surface:						
Large and small tubes	**sq ft**	1,061	1,076	1,061	1,076	1,916
Firebox water tubes	**sq ft**	—	—	129*	—	—
Firebox	**sq ft**	117	112	115	112	134†
Total evaporative	**sq ft**	1,178	1,188	1,176*	1,188	2,050
Superheater	**sq ft**	—	—	—	—	—
Combined heating surface	**sq ft**	1,178	1,188	1,176	1,188	2,050
Superheater elements	**No**	—	—	—	—	—
Grate area	**sq ft**	20½	19½	20½	19½	26†
Boiler pressure	**lb/sq in**	175	180	175	175	180
Tractive effort	**lbs**	17,890	18,401	21,469	21,469	21,922†
Coal (Tank locomotive)	**t**	—	—	—	—	—
Water (Tank locomotive)	**gal**	—	—	—	—	—
Weight (Engine only)	**t-c**	46-0	46-17	43-0	43-10	59-19

*Nos 18-21 Water tube firebox (total HS 1,305sq ft)

†Nos 26-8, 43 (r/n 29), 50/8/9 Firebox 132sq ft, Grate area 25½sq ft, Nos 50/8/9 Driving wheels 6ft 0in TE 21,008 (180lb-sq in), 20,425 (175lb/sq in) Wt 60t-13c

Table 3B

GSWR Locomotives

CLASS GSWR/LMS†		279: 71/3F	131; 331/3P		137: 325/3P	16: 51/4F	45; 11/3F	1/3F	5: 322/2F
Condition		*As built*	*As built*	*S'heat*	*As built*	*As built*	*Drummond*	*Whitelegg*	*As built*
Cylinders	**in×in**	19½×26	19½×26	19½×26	19½×26	19½×26	18¼×26	18¼×26	17×22
Bogie wheels	**ft in**	—	3-6	3-6	3-6	3-6	—	—	—
Driving wheels	**ft in**	5-0	6-0	6-0	6-0	5-0	5-0	5-0	4-2
Trailing wheels	**ft in**	—	—	—	—	—	4-0	4-0	—
Heating surface:									
Large and small tubes	**sq ft**	1,584*	1,680*	1,444	1,444	1,344	1,144	1,144	758
Firebox	**sq ft**	148	148	148	148	147	110	110	80
Total evaporative	**sq ft**	1,732*	1,828*	1,592	1,592	1,491	1,254	1,254	838
Superheater	**sq ft**	—	—	331	331	211	—	—	—
Combined heating surface	**sq ft**	1,732*	1,828*	1,923	1,923	1,702	1,254	1,254	838
Superheater elements	**No**	—	—	22	22	22	—	—	—
Grate area	**sq ft**	20¼	27½	27½	27½	26¼	22½	22½	17
Boiler pressure	**lb/sq in**	180	180	180	180	180	180	180	160
Tractive effort	**lbs**	25,210	21,009	21,009	21,009	25,210	22,080	22,080	17,293
Coal (Tank locomotives)	**t**	—	—	—	—	—	3	3	1¾
Water (Tank locomotives)	**gal**	—	—	—	—	—	1,800	1,910	1,020
Weight (Engine only)	**t-c**	57-16	61-0	61-17	61-17	62-1	66-5	66-19	40-0

†GSWR Class quoted as pre-1919; post-1919

*GSWR quoted HS of tubes as 1,637sq ft (279; 71) and 1,680sq ft (131; 331)

	Shunting tank/2F	*Passenger tank/OP*	*New Ben/2P*		*Banking/4P*	
LMS	*As built*	*As built*	*As built*	*S'heat*	*As built*	*GSW boiler*
19½×26	18×24	14×20	18¼×26	18¼×26	18½×26	18½×26
3-3	—	—	3-6	3-6	—	—
5-9†	5-2½	4-6	6-0	6-0	5-0	5-0
—	—	2-6	—	—	3-3	3-3
1,974	1,093	652	1,516	1,017	1,148	1,144
—	—	—	—	—	—	—
134	93	68	132	132	120	110
2,108	1,186	720	1,648	1,149	1,268	1,254
—	—	—	—	168	—	—
2,108	1,186	720	1,648	1,317	1,268	1,254
—	—	—	—	19	—	—
26½	16¼	13	20¼	20¼	22½	22½
175	160	150	180	175	180	175
21,313†	16,921	9,256	18,401	17,890	22,082	21,469
—	1¾	1¼	—	—	4½	4½
—	1,000	900	—	—	1,970	1,970
59-19	47-18	35-15	52-6	53-16	69-0	69-10

Table 3C

HR Tenders

Coal	**t**	5	5	6	5	6	6½
Water	**gal**	3,000	3,185	3,200	3,350	3,600	4,000
Weight	**t-c**	32-10	38-7	43-0	44-9	45-5	46-7
No of Wheels		6	6	8	8	8	6
Classes using each type		Ben, Drummond Goods	Ben, New Ben	Ben, Drummond Goods, New Ben	Castle	New Ben	Castle

Table 3D

G&SWR Tenders

Coal	**t**	6	6½	6
Water	**gal**	3,800	3,800	3,970
Weight	**t-c**	47-2	47-6	45-19
Classes using each type		131; 331	279; 71, 137; 325	16; 61

Note: The LMSR recorded all these tenders as carrying 6t of coal, 3,800gal of water and wt 47-6

Locomotives for the Highland Railway

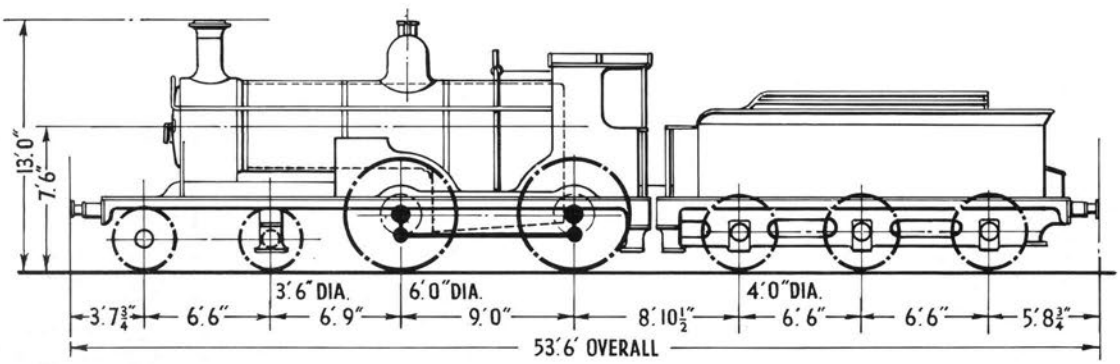
SECTION 32

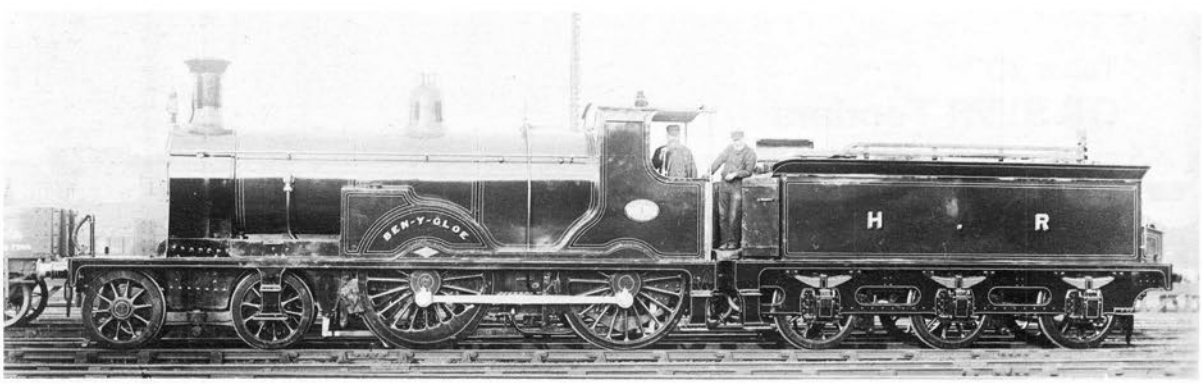
4-4-0 HR Class C or 'Ben'; LMSR BR 2, later 2P
Passenger Engines
Introduced: 1898
Total: 20

The first design acreditable to Peter Drummond, the 'Ben' Class 4-4-0, was somewhat similar to the LSWR 'C8' class which appeared only a few months earlier. All were named after mountains in the north of Scotland; the name applied initially to the first engine was *Ben Nevis* but the realisation that Scotland's premier mountain lay well within NBR territory ensured an immediate change to *Ben-y-Gloe*! At first six-wheeled tenders of 3,000gal capacity were fitted to Nos 1-17, but soon Nos 2, 13/5/7 had eight-wheeled 3,200gal type attached; the other three started with six-wheeled tenders carrying 3,185gal. Subsequently there were many changes of tenders. Nos 1-8 were built with lever reversing gear for the Stephenson link motion but later they were altered to conform to the rest of the class, which were built with steam reversers. The HR was a vacuum brake railway, but Nos 2, 12-7 were dual braked to handle other companies' air braked stock; the engines however remained vacuum braked. Little change was made to their

Below: Outline drawing of the Class C 'Ben' 4-4-0 design, introduced in 1898 (showing later boiler, with safety valves on the firebox top.)

Bottom: The strong family likeness between Peter Drummond's engines and brother Dugald's is immediately apparent in this photograph of HR Class C 4-4-0 'Ben' No 1 *Ben-y-Gloe*, if it is compared with the LSWR 'C8' class. No 1 was built by Dubs in 1898. *LPC*





appearance by the HR, other than moving the safety valves from the top of the dome on to the firebox on several, and fitting the short-lived Smith's (Drummond's successor on the HR) feed water heating equipment on Nos 2 and 7 about 1913.

The advent of a large boilered version in 1908, known as 'New Bens' (Section 37) resulted in a general use of the name 'Small Bens' for this class, but the name was never offically adopted by the HR.

The LMSR repainted most in the crimson livery at first, which suited the class extremely well, but from 1928 black became the normal livery. Soon CR pattern chimneys and smokebox doors were fitted to several and then in 1927-30 CR type N34 boilers (as used on the CR 'Jumbos') were fitted to all but Nos 14407/11/3/4, rather changing their appearance. At the same time many received new 18$\frac{1}{4}$in × 26in cylinders.

Intended for secondary duties the HR used the class initially on trains from Inverness to Wick and Keith (and later the through trains over the Great North of Scotland Railway to Aberdeen). The LMSR kept most of the class on the HR section, just a few spending a short while further south on former GSWR services, and gradually they became branch line engines. Four ran as BR Nos 54397-9, 54404 and the last, *Ben Alder*, survived from condemnation in 1953 until 1966 but regrettably attempts at preservation failed. The engines were built as follows: (LMSR number on the right):

Nos 1-3	Dubs	1898	14397-9
Nos 4-8	Dubs	1899	14400-4
Nos 9-11	Lochgorm	1899	14405-7
Nos 12-4	Lochgorm	1900	14408-10
Nos 15-7	Lochgorm	1901	14411-3
Nos 38, 41/7	Lochgorm	1906	14414-6

First of class withdrawn: 14407 (4/1931)
Last of class withdrawn: 54398 (2/1953)
None preserved

Below: In latterday, less elaborate HR green livery, and with the number located high on the cab sidesheets, Class C, 'Ben', 4-4-0 No 14 *Ben Dearg* is seen attached to one of the eight-wheeled 'Water Cart' type tenders; curiously these tenders never seem to have been called such in Scotland. *LPC*

Above: With the safety valves relocated on top of the firebox, and in LMSR lined black livery, 'Ben' No 14415 *Ben Bhach Ard* is seen here at Aviemore on 30 May 1936. Tablet catcher fitted to cabside, and smokebox wingplates removed.
R. G. Jarvis collection

Below: A very worthy candidate for preservation, but one which *alas* escaped the net, was the 'Ben' class 4-4-0 *Ben Alder*, which had survived long enough to carry its BR number, 54398. For some 13 years the engine was stored in the hope that it could join the ranks of officially preserved steam, and it is seen here at Inverness, looking distinctly forlorn, before breaking-up.
Peter Rowledge collection

SECTION 33

0-6-0 HR Class 'K' or 'Drummond Goods'; LMSR/BR 3, later 3F Goods Engines

Introduced: 1900
Total: 12

For secondary goods traffic Peter Drummond produced a six-coupled version of the 'Bens' in 1900, but inevitably there was some semblance to the LSWR '700' class of 1897. The six 1900 engines introduced the eight-wheeled tender to the HR, but the rest had slightly smaller six-wheeled tenders; actually the bogie tenders were intended for the 'Bens' and four of them were soon exchanged, but it was not until 1906-10 that the other two were replaced, going to a pair of 'New Bens'. Nos 18-21 of 1902 had water tube fireboxes which lasted until 1923-34. For both the engine and tender and trains the vacuum brake was fitted.

Little alteration was made by the HR, beyond moving the safety valves from the top of the dome on to the firebox. The LMSR reboilered most with the N34 boiler in 1926-43, only No 17701 retaining an HR boiler throughout, but four reverted to the original type. Three, Nos 17697, 17700/3 acquired stove pipe chimneys.

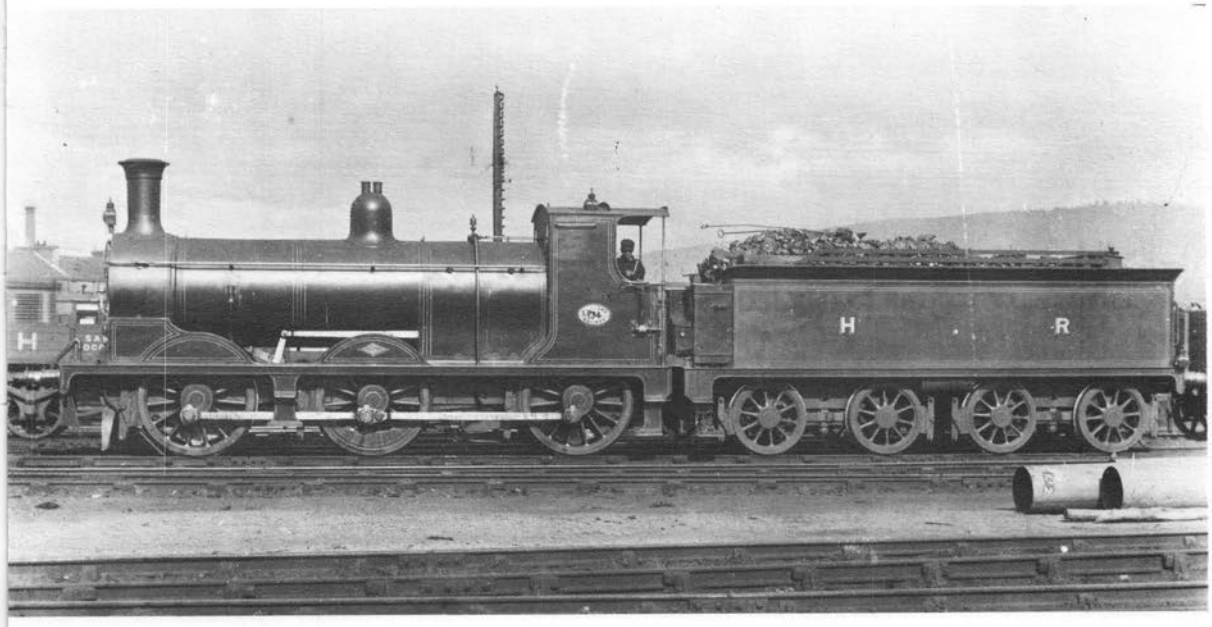
Always a secondary goods type the class continued to work on the Highland lines until the late 1930s when several were sent south to Glasgow where they were to be seen on passenger work. However during World War 2 they were at work on the Highland lines, until in 1946 the eight survivors were transferred to work in the Glasgow area once again. They then finished their days at Ayr, Ardrossan and Hurlford; three running as BR Nos 57695/7/8. The dates of building and renumbering details are as follows (LMSR renumbering on the right):

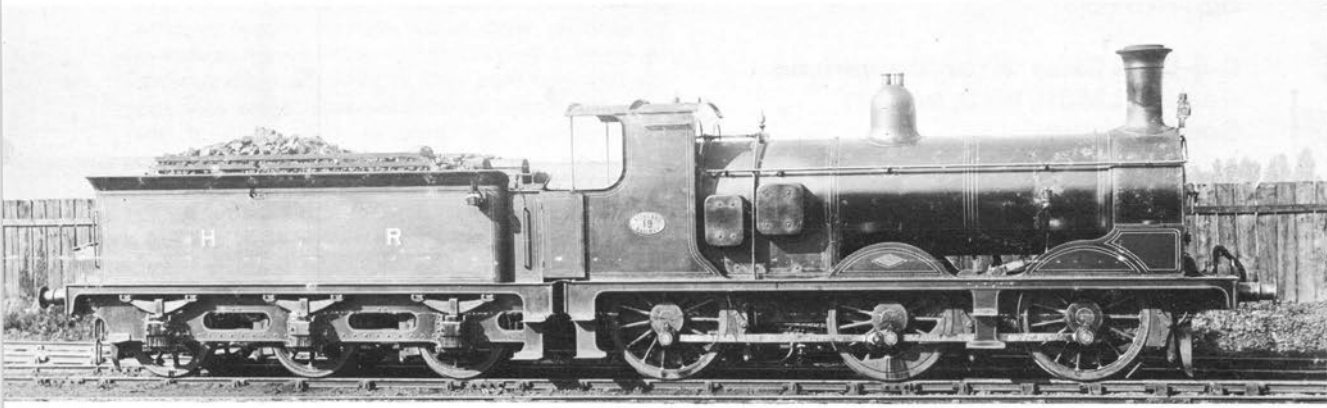
Nos 134-9	Dubs	1900	17693-8
Nos 18-21	Dubs	1902	17699-17702
Nos 36, 55*	North British	1907	17703/4

*55 renumbered 37 (1921)

First of class withdrawn: 17701 (2/1936)
Last of class withdrawn: 57695 (1/1952)
None preserved

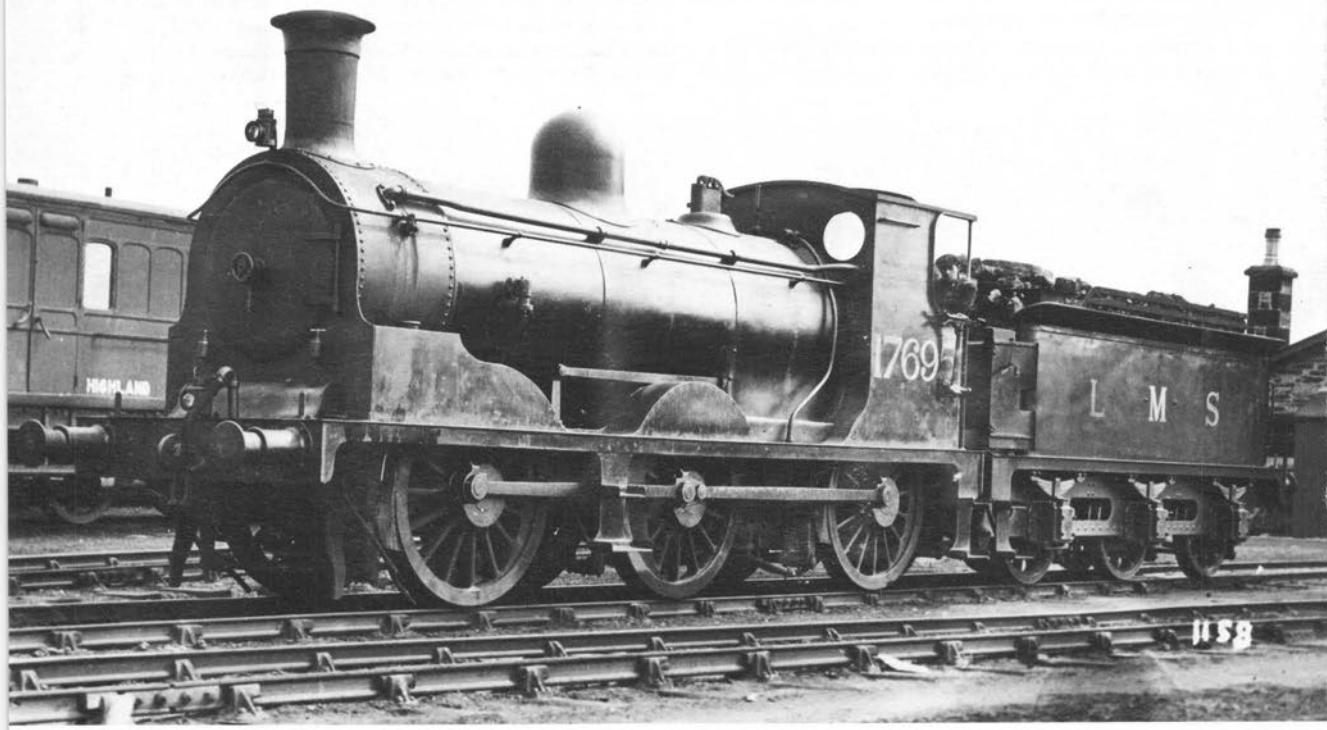
Below: Peter Drummond's second locomotive design for the HR was the Class K 0-6-0 for goods work, not dissimilar to Dugald's '700' class for the LSWR. The first six engines, built in 1900 by Dubs, featured eight-wheeled 'Water Cart'-style tenders as seen here on the first of the class No 134. *Ian Allan Library*





Above: With the later, smaller six-wheeled tender design No 19, of the 1902 batch built by Dubs, also displays the water tube firebox which Nos 18-21 carried until 1923-24.
Ian Allan Library

Below: The safety valves have been relocated on top of the firebox and the engine is in 1930s style LMSR black livery, otherwise the appearance of ex HR 0-6-0 Class K (LMSR Class 3F) No 17695 had little changed since building, and this particular engine was destined to remain in service until January 1952, when it was the last of the class to be withdrawn (as BR No 57695). *LPC*



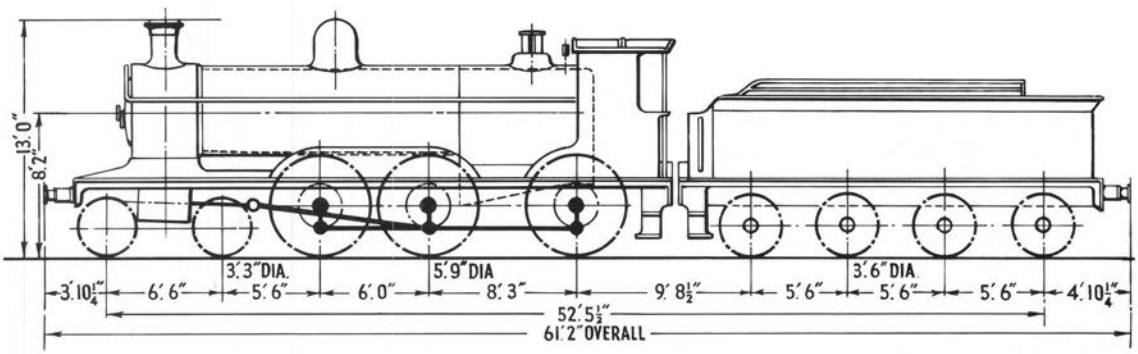
SECTION 34

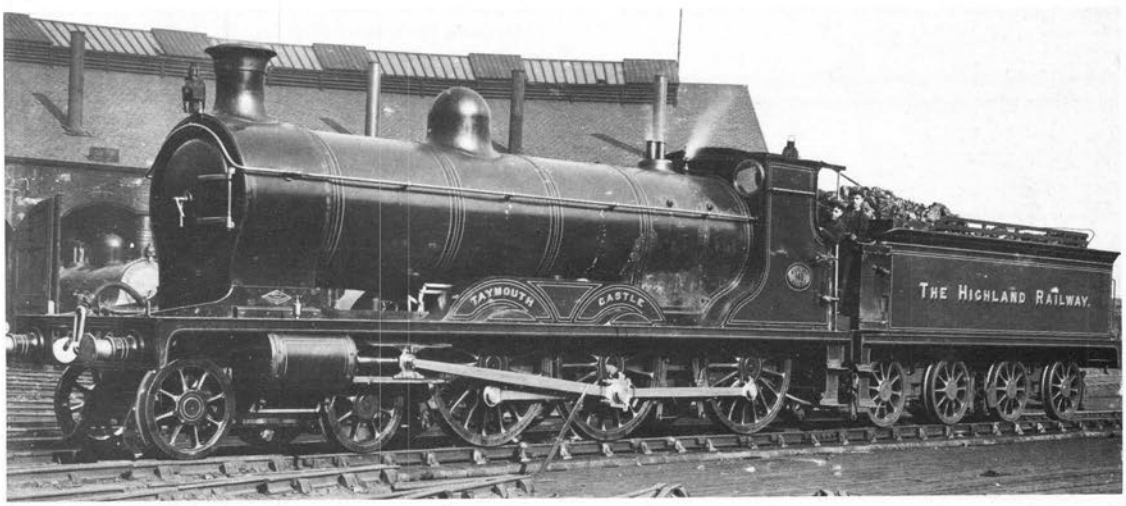
4-6-0 HR Class A or 'Castle'; LMSR 3, later 3P
Passenger Engines
Introduced: 1900
Total: 19

The first 4-6-0 design to appear under the name of Drummond seems not to have been one of their own design at all! A specification for a passenger version of the 'Jones Goods' 4-6-0 was said to be well in hand when 'PD' arrived at Lochgorm. When the order was placed for the first batch Peter Drummond made only superficial alterations, such as the shape of the chimney, the use of a steam reverser, marine big ends, balanced slide valves instead of piston valves, and modifications to the cab and boiler mountings. Delivery took place in several batches in 1900-17, the last two groups being ordered after his departure for Kilmarnock. The 1913 batch had extended smokeboxes, capuchon chimneys, larger dome covers, solid big ends, altered windows in the cab front sheets and coal rails on the tenders. The 1917 batch differed yet again, with the principal change being the increased coupled wheel diameter (3in larger), and other changes involving the boiler, dome cover and cab roof, plus a screw reverser. Unlike the others these three engines had six-wheeled tenders and somehow they never gained quite the esteem of the enginemen that the rest of the class had.

Below: Outline drawing of the 'Castle' or 'A' class 4-6-0 passenger engine design, introduced in 1900.

Bottom: The distinctive 'Drummond' cab and chimney, and the 'Water Cart' tender cannot disguise the true origin of the 'Castle' class 4-6-0, first proposed by Peter Drummond's predecessor, Jones. These fine engines proved exceedingly sound in design and were an asset to the HR, being much liked by their crews. No 140 *Taymouth Castle* is seen here moving-off the Inverness shed turntable. This engine was the first of the class, built by Dubs in 1900. *LPC*





Changes made in HR days included a trial with a Phoenix superheater (in an extended smokebox) about 1912 on No 141, extended smokeboxes on Nos 143/5, and the provision of automatic air brakes on Nos 146-9 when new.

An unusual affair related to the 'Castles' was the construction of 50 in a great hurry by North British for the French State Railways which were identical in virtually every respect except that they had air brakes. These engines lasted until 1933-7.

The LMSR used Caledonian style chimneys, smokeboxes and dome covers on some and substituted Ross 'pop' safety valves for the originals; they also continued to replace marine type big ends by solid big ends. Apart from the experiment about 1912 none was ever superheated.

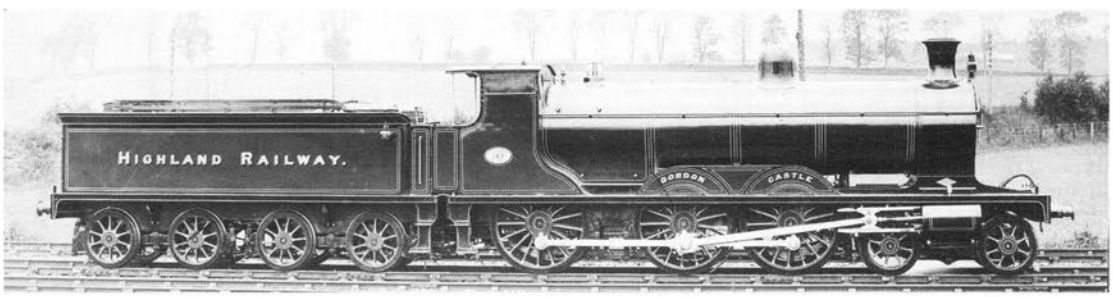
Until 1913 the 'Castles' were normally confined to the Perth and Inverness trains, but from then on duties on the Further North line were included. The LMSR found the class useful elsewhere in Scotland and sent some to work the Oban line for a while in the late 1930's. Three had made an appearance in England in 1920-1 when Nos 28 and 143 were overhauled by Hawthorn, Leslie and No 141 went to the Yorkshire Engine Co. In 1910 a curious and somewhat inconclusive trial was held comparing No 146 with NBR 4-4-0 No 867, running between Blair Atholl and Dalwhinnie on the HR and Perth to Kinross on the NBR.

The engines were built, and renumbered by the LMSR (right) as follows:

Nos 140-9	Dubs	1900	14675-80
Nos 146-9	Dubs	1902	14681-4
No 30	North British	1910	14685
No 35	North British	1911	14686
Nos 26-8, 43*	North British	1913	14687-90
Nos 50/8/9	North British	1917	14691-3

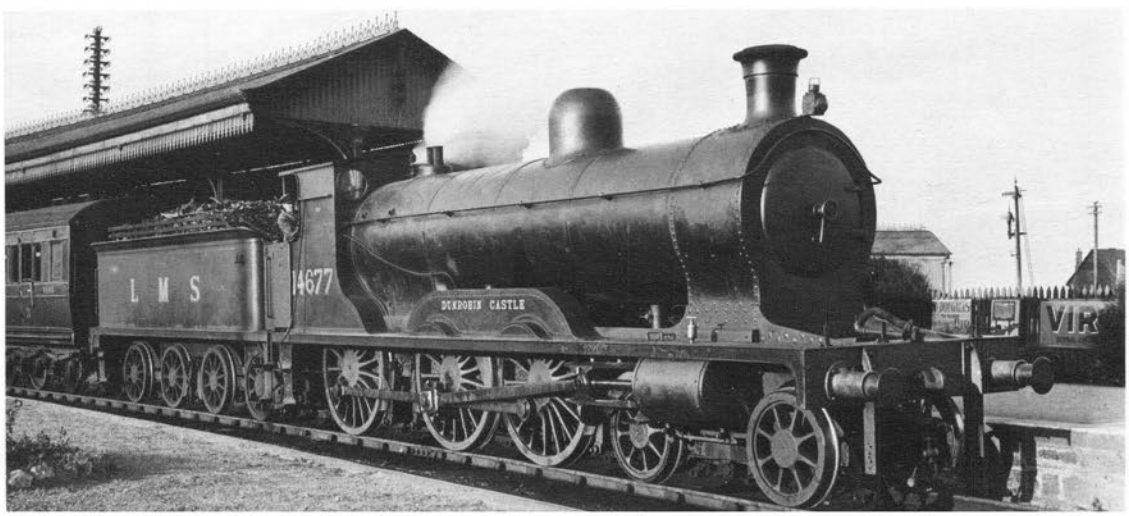
*No 43 renumbered 29 (1913)

First of class withdrawn: 14680 (5/1930)
Last of class withdrawn: 14690 (4/1947)
None preserved



Above: A truly elegant design when viewed from almost any angle! 'Castle' class 4-6-0 No 143 *Gordon Castle* poses for the camera in immaculate Drummond livery. *Ian Allan Library*

Below: Rising costs forced the LMSR to restrict the number of locomotive types painted in the crimson lake livery, and the former HR 'Castles' were among the passenger engines repainted black, with red lining, during the 1930s. Nevertheless looking very smart, is No 14677 *Dunrobin Castle* photographed at Forres on 24 October 1936. The LMSR placed the name in a straight line, with simplified lining-out on the splashers. Note brackets for snowplough on the bufferbeam and vacuum standpipe folded back. *R. G. Jarvis collection*



0-6-0T HR Class V or 'Shunting Tank'; LMSR 2, later 2F

Shunting Tank Engines
Introduced: 1903
Total: 3

There was very little need for engines purely for shunting work on the Highland and when a few more were required to replace aging tender engines Lochgorm produced three, quite unremarkable except for the fact they used boilers recovered from obsolete 2-4-0 locomotives and reusable wheels and others parts. The result was a class that had unusually large diameter wheels for shunting and years later, long after they had all gone, someone coined the enthusiasts' nickname of 'Scrap Tanks'! Normally two worked at Inverness and the other at Perth.

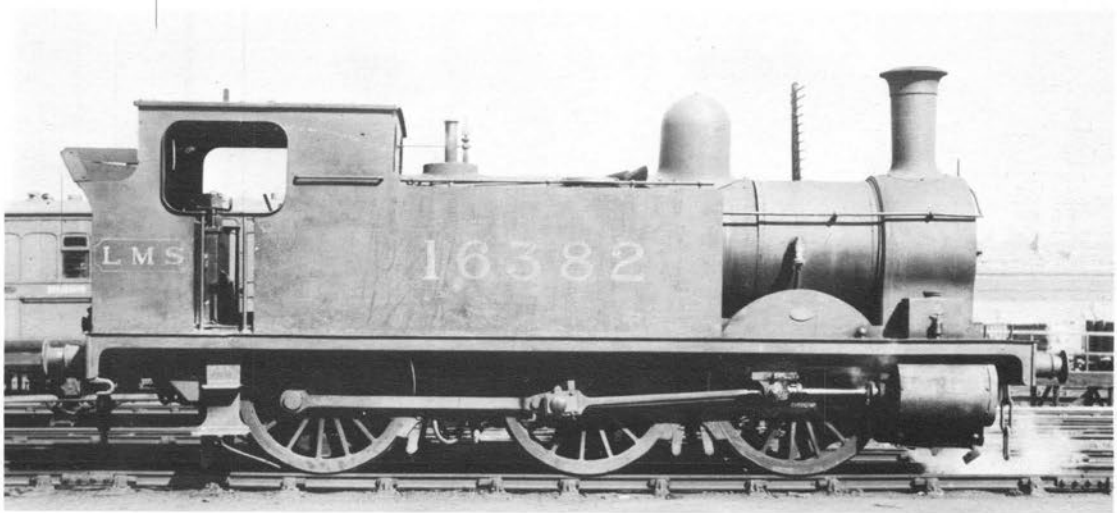
The engines were built and were renumbered by the LMSR (right) as follows:

Nos 22/3	Lochgorm	1903	16380/1
No 24	Lochgorm	1904	16382

First of class withdrawn: 16380/2 (12/1930)
Last of class withdrawn: 16381 (12/1932)
None preserved

Below: Class V 0-6-0T for shunting duties, one of only three built, using secondhand boilers, wheels and other components. No 23 is seen here, built at Lochgorm in 1903. *LPC*

Bottom: In early goods engine black LMSR livery, with the company initials painted upon a small vermilion panel on the bunker sides, No 16382 (originally HR No 24) is seen here with a primitive wooden coal rail to give added coal capacity but otherwise little changed. The safety valves were somewhat unusually placed side-by-side instead of in line.
Real Photographs



SECTION 36

0-4-4T HR Class W or 'Passenger Tank'; LMSR/BR unclassified, later 1P Passenger Tank Engines

Introduced: 1905
Total: 4

Peter Drummond produced a very neat, although small, class of branch line tanks engines which proved to be the last built by the company at their own works at Lochgorm. The only technical feature to note was the Drummond spark arrestor. Only two of the four were ever named, but even they were nameless from about 1920. Two survived to Nationalisation and ran as BR Nos 55051/3, stationed at Helmsdale, working the Dornoch branch in alternate weeks. No 55053 was very elaborately lined out at its final repaint and might well have lasted until the closure of the branch in 1960 had it not suffered a broken crank axle in 1957; it was the last working Highland engine and the last of Peter Drummond's design. The engines were built as follows (LMSR renumbering on the right):

Nos 25, 40/5	Lochgorm	1905	15051-3
No 46	Lochgorm	1906	15054

First of class withdrawn: 15052 12/1930
Last of class withdrawn: 55053 1/1957
None preserved

Above: True members of the 'Drummond family tree' were the charming little 'W' class 0-4-4T, the 'Passenger Tanks'. These four engines were for branch line duties over lightly-laid tracks. Two were named, and one of these No 25 *Strathpeffer* is seen here, built at Lochgorm in 1905. *Ian Allan Library*

Below: A delightful study of LMSR No 15053, in black livery, lined red, taken at Dornoch on 1 June 1936. This was originally HR No 45. Ross 'pop' safety valves on the dome, tablet catcher on cabside, improvised cab shelter, and brackets for snowploughs under leading bufferbeams.
R. G. Jarvis collection

SECTION 37

4-4-0 HR Class U or 'New Ben'; LMSR 2, later 2P

Passenger Engines
Introduced: 1908
Total: 6

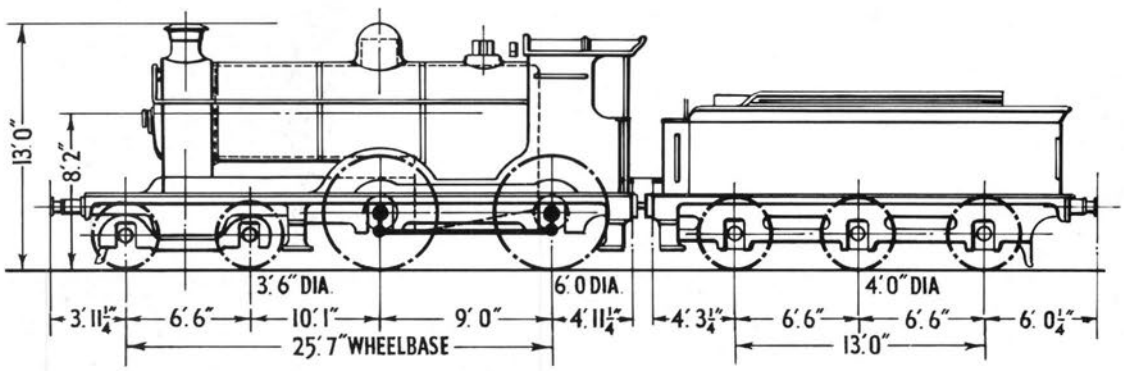
Only two years after the last of the 'Bens' had been built a larger boilered version appeared, having frames and many other details in common with the latter, but the tractive force was greater because of the higher boiler pressure of 180lb/sq in. The four 1908 engines were supplied with six-wheeled tenders but Nos 61 and 63 quickly acquired bogie tenders from the last of the 0-6-0 locomotives to have them. Nos 60 and 62 arrived with bogie tenders of 3,600gal capacity. Three, Nos 60/1/3 were dual braked and later Smith's feedwater heating system was fitted to all but No 61, although it was not many years afterwards that it was all removed.

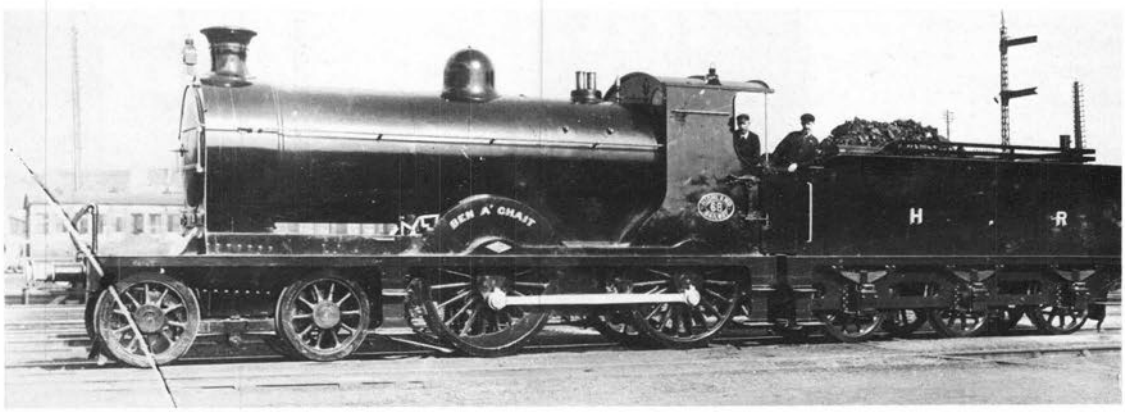
The LMSR made the major change of superheating, completing HR plans, in 1923-7, using the original boilers, the superheater having the unusual number of 19 elements. Other changes were extended smokeboxes and capuchon chimneys.

The normal duties of the 'New Bens' (often referred to outside the railway as 'Big Bens') were between Inverness and Aberdeen and to Wick, with less frequent use to Perth. Despite superheating, which did not lessen significantly their appetite for coal, the class lasted for considerably fewer years

Below: Outline drawing of the Class U 4-4-0, with six-wheeled tender, introduced in 1908.

Bottom: Although the glass plate negative has suffered a little from the ravages of time, we nevertheless reproduce this fine study of Class U, or 'New Ben' 4-4-0 No 68 *Ben a' Chait* as it shows the plain dark green livery of the HR introduced in 1906. This locomotive was built at North British in 1908. With this design Peter Drummond ceased to place the safety valves on the dome of his new engines. Six-wheeled tender attached. *LPC*





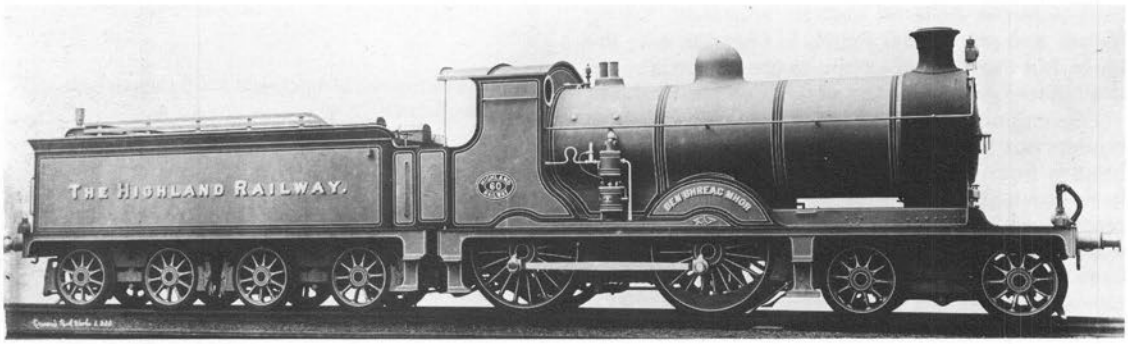
than the older 'Bens'. The engines were built as follows (LMSR renumbering on the right):

Nos 61/3/6/8*	North British	1908	14417-20
Nos 60/2	North British	1909	14421/2

*Nos 66/8 renumbered 64/5 (1909)

First of class withdrawn: 14421 (10/1932)
Last of class withdrawn: 14422 (3/1937)
None preserved

Below: Despite the fact that the HR had gone over to a plain dark green livery, devoid of any lining, this works photo of 'New Ben' 4-4-0 No 60 *Ben Bhreac Mhor* purports to show all the glory of the previous Drummond livery (actually, of course, it was in matt grey for photographic purposes!) This engine is fitted with an air-brake as well as vacuum. Built by North British in 1909, and delivered to traffic with a 'Water Cart' tender. *LPC*



Top right: The LMSR fitted superheaters to the 'New Bens' and an extended smokebox with a new capuchon-topped chimney. In black livery, lined red, Class 2P 4-4-0 No 14417 *Ben Na Caillach* is seen here at Aviemore on 31 August 1935, attached to an eight-wheeled tender.
R. G. Jarvis collection

Right: Definitely not as clean as in pre-Grouping days, No 14422 (originally HR No 62) *Ben a' Chaoruinn* was photographed at Elgin on a train to Forres in 1936. It was the last of the class to be withdrawn, in the following year.
F. R. Hebron/Rail Archive Stephenson

BEN NA CAILLACH
1441
L M S

14422
TO LNER TRAINS & REFRESHMENT ROOMS
Burgoynes
HARVEST
BURGUNDY

SECTION 38

0-6-4T HR Class X; LMSR 4, later 4P Banking Tank Engines

Introduced: 1909
Total: 8

Peter Drummond's final class for the HR comprised eight large tank engines, indeed the largest produced by either of the Drummond brothers. They were built in 1909-12. The cylinders and wheels were similar to the 0-6-0 engines and the bogie was that of the 'Castle' class. In appearance they were quite massive and in some contrast to any previous HR or Drummond design. Unusually tablet-catchers were fitted on both sides of the engine rather than on the left only, the normal Highland practice. Despite their intended use as bankers on the 'big Hill' from Blair Atholl they were used on more general duties on the main line, including passenger work.

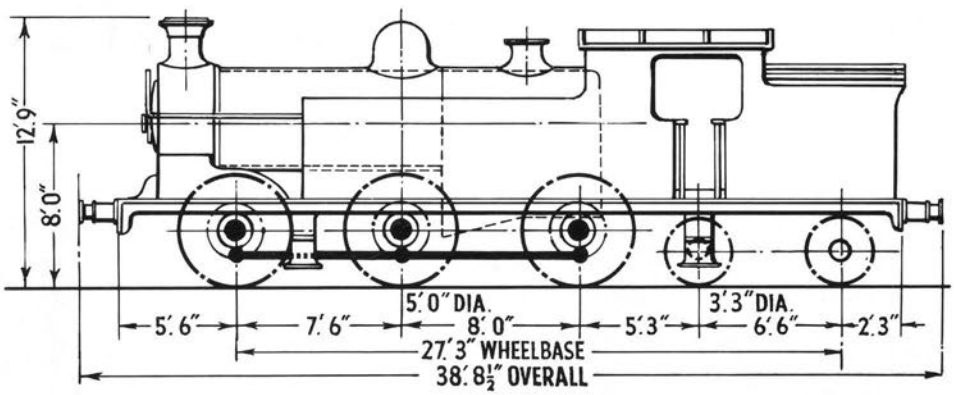
The LMSR gave the class passenger status and accordingly some appeared in the red livery. Nos 15300/6/7 were fitted by the LMSR with a Drummond boiler designed for the somewhat similar 0-6-2T built by the GSWR, but otherwise the class altered little.

The engines were built as follows (LMSR renumbering on the right):

Nos 39, 64/5/9*	North British	1909	15300-3
No 29*	North British	1910	15304
No 31	North British	1911	15305
Nos 42/4	North British	1912	15306/7

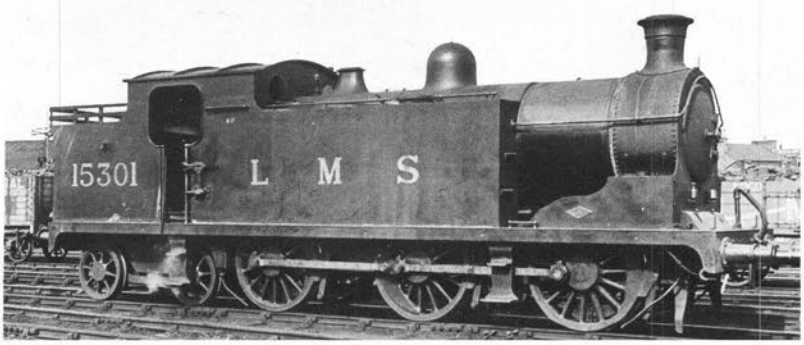
*Nos 64/5 renumbered 66/8 (1909); No 29 renumbered 43 (1913)

First of class withdrawn: 15303/4 (2/1932)
Last of class withdrawn: 15300 (12/1936)
None preserved



Above: Outline drawing of the 'X' class 0-6-4T design, introduced in 1909.

Right: These 'X' class massive tank engines, originally designed for banking duties sported a new Peter Drummond feature in the form of a casing for the safety valves. No 68 (at first No 65) is seen here in the plain green HR livery. It was built by North British in 1909. *LPC*



Bottom right: LMSR Class 4P 0-6-4T No 15301, in plain black livery, originally HR No 64 (then 66.) Photographed in the 1930s. *F. R. Hebron/Rail Archive Stephenson*

Locomotives for the Glasgow & South Western Railway

SECTION 39

0-6-0 GSWR Class 279 (later 71) Load class A; LMSR 4, later 4F Heavy Goods Engines
Introduced: 1913
Total: 15

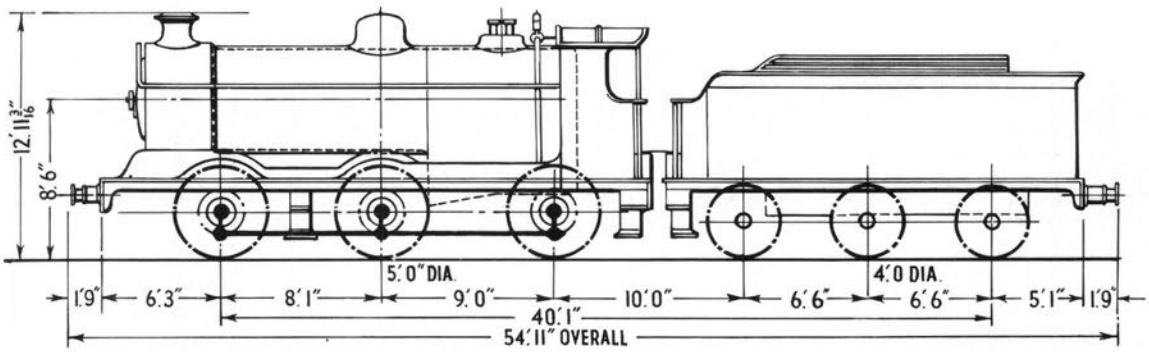
Peter Drummond's first class for the Glasgow & South Western Railway was different in just about every possible way from any type working on the system and while its size was imposing, being the heaviest 0-6-0 in Britain at the time, (not being exceeded in this respect until the arrival of the LNER 'J39' class in 1927) its performance was lamentable. This combined with all the other changes he made ensured that 'PD's' engines were unpopular! All the Drummond features were present, a steam drier, marine big ends, steam reverser between the frames, feed water heating in the tender and duplex feedwater pumps — hence the enginemen's name of 'Pumpers'. Piston valves were driven by Stephenson link motion through rockers, an arrangement that has rarely resulted in anything other than sluggish locomotives, to which the 'Pumpers' were no exception! Put to work on the main line between Glasgow and Carlisle they caused the men such hardship, being unable to keep time with anything like a full load, that a bonus of 6d ($2\frac{1}{2}$p) per completed trip was conceded — coal consumption was in the order of 90-100lb per mile or more and few seemed to except to finish a journey without failure!

At the earliest opportunity the steam reverser and feed water heaters and pumps were removed and the LMSR replaced the marine big ends by a cottered type. Otherwise the engines remained as built and as quickly as possible they were displaced from main line work, only to struggle with local goods and coal trains after 1925. Two, LMSR Nos 17754/63, went for a short stay on the Furness section, and another had a short spell on goods workings to Preston and Crewe!

All were built by North British in 1913 being Nos 279/92-9, 300-5 until renumbered 71-85 in 1919; the LMSR numbers were 17750-64.

First of class withdrawn: 17751/61/4 (11/1930)
Last of class withdrawn: 17758 (9/1933)
None preserved

Below: Outline drawing of the Class 279 0-6-0 Goods engine, introduced in 1913.



4-4-0 GSWR Class 131 (later 331) Load class P; LMSR 3, later 3P
4-4-0 GSWR Class 137 (later 325), Load class P; LMSR 3, later 3P
Passenger Engines

Introduced: 1913 ('131' class) and 1915 ('137' class)
Total: 6 ('131' class), 6 ('137' class)

As in previous instances 'PD' copied a recent LSWR class, the 'D15' of 1912 in this case, the Scottish version being slightly heavier. In fact they were the heaviest British 4-4-0 for a while; the superheated 1915 engines keeping the distinction until 1927 when the Gresley 'D49' class was introduced by the LNER. Just like the 'Pumpers' the '131' class had all the Drummond gadgetry, but the pumps were discarded as early as 1915. For the first time Peter Drummond used Walschaerts valve gear.

The superheated '137' class was similar in many respects to the saturated '131' class, but they were the first Drummond class to be built with proper superheaters, although the feedwater heating system was used as well, being discarded later by Whitelegg.

In running there could not have been a greater contrast between the two classes; the saturated engines were sluggish and lamentable on hills, yet the superheaters were very free runners, although suffering from many other Drummond faults. The '131' class was shared between Greenock and Ayr, while the '137' class went to Carlisle and Ayr. However in LMSR days they spent their time on locals. All but one of the saturated engines, No 14511 being the exception, were superheated in 1923-31; another alteration was the replacement of the marine type big ends. No 14516 was altered to right hand drive in 1923.

The engines were built as follows; LMSR renumbering on the right:

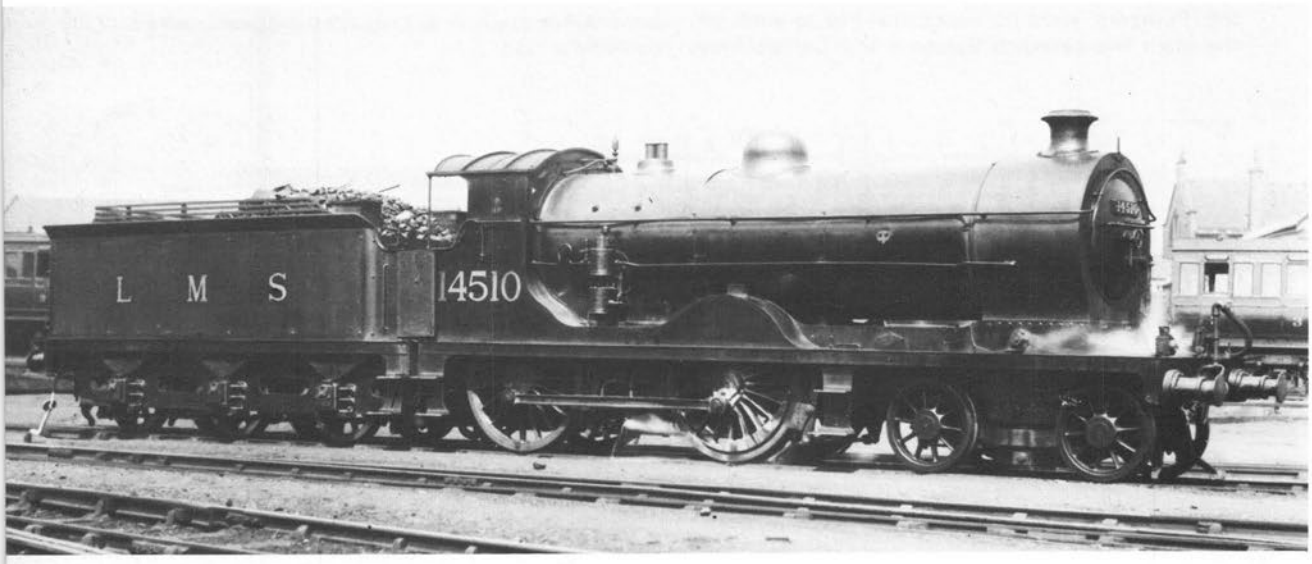
North British	1913	14510-5
Kilmarnock	1915	14516-21

Nos ('131' class 131-6	(331-6)*
Nos ('137' class) 137-40/51/2	(325-30)*

*1919 numbers

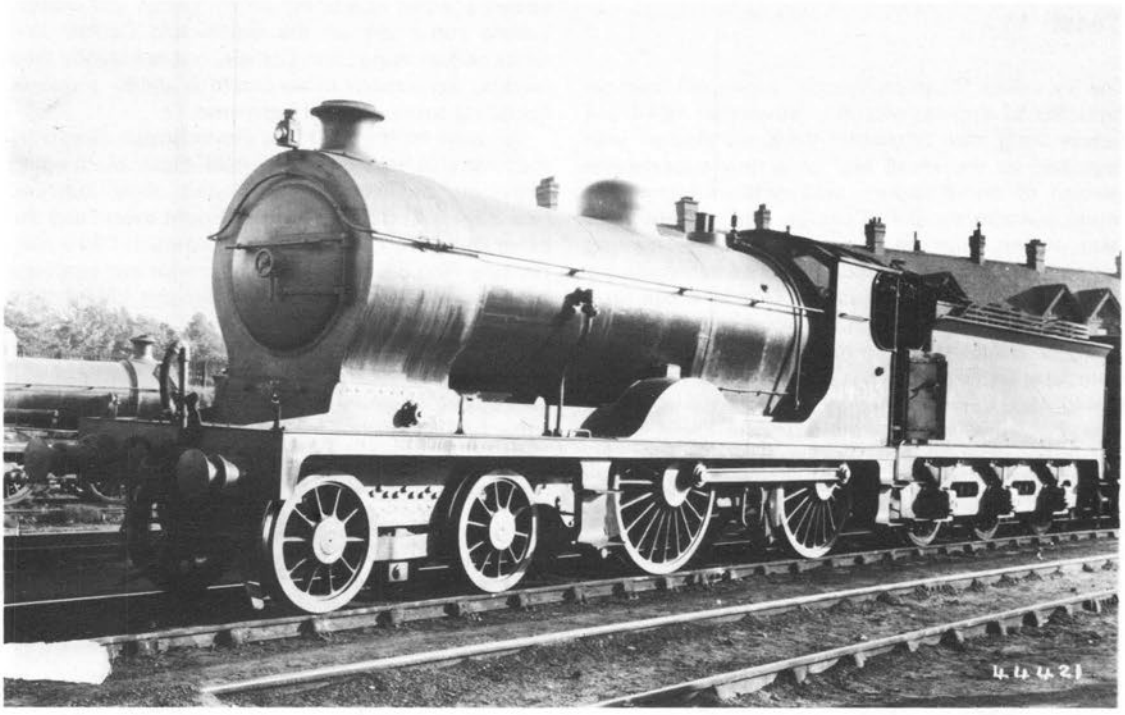
First of class withdrawn: '131' 14511/2 (10/1934) '137' 14518 (12/1934)
Last of class withdrawn: '131' 14513 (12/1937) '137' 14521 (8/1937)
None preserved

Below: Clearly derived from brother Dugald's highly successful Class D15 4-4-0 for the LSWR (see Section 30,) Peter's version was slightly heavier. The first version, the '131' class was saturated, but one innovation was the use of inside Walschaerts valve gear. In LMSR days, No 14510 (originally G&SWR No 131, the first of the class), is seen here in black livery. The LMSR power classification was 3P. This example was dual-braked. *Real Photographs*



Below: LMSR Class 3P 4-4-0 No 14515, originally G&SWR Class 131 No 136, built by North British in 1913. All the '131' class, except No 14511, were fitted with superheaters by the LMSR, between 1923-31. *Real Photographs*

Bottom: The Class 137 version of the big 4-4-0 engines was delivered to service in 1915 from Kilmarnock works. These were fitted with superheaters, and proved to be extremely free-running engines as a result. No 325 (originally No 137, first of the class) is seen here during shunting operations at Glasgow St Enoch.
F. R. Hebron/Rail Archive Stephenson



SECTION 41

2-6-0 GSWR Class 16 (later 51) Load class A; LMSR 4, later 4F Express Goods Engines

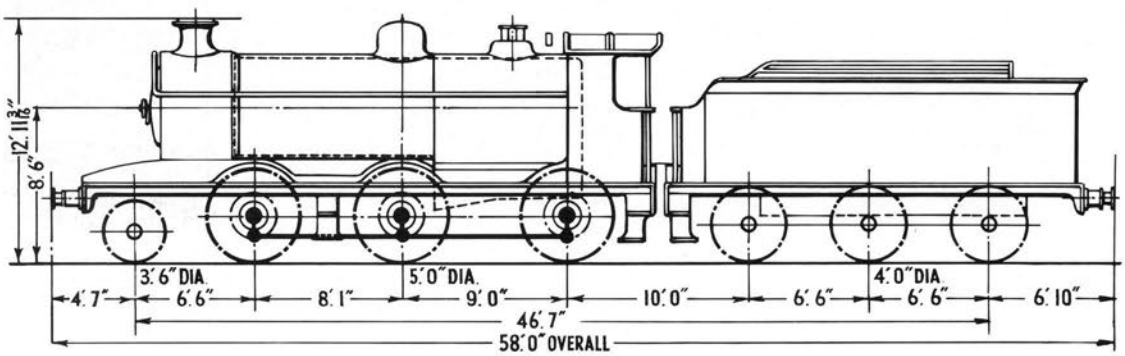
Introduced: 1915
Total: 11

The so called 'Austrian Goods' originated from an order for 11 engines placed in November 1914, but before long the originally tendered design was regarded as too small and so a new superheater version of the 'Pumpers' was ordered instead. In many features the 0-6-0 design was repeated, but with normal superheating the feedwater heating apparatus was totally discarded. The extraordinary enginemen's name of 'Austrian Goods' arose from an erroneous belief that the engines were built with material intended for an North British Locomotive Company order for Austria which, had it been fact, would have been nullified by the outbreak of World War 1 — just how the name came about defies painstaking research but the name stuck throughout their existence.

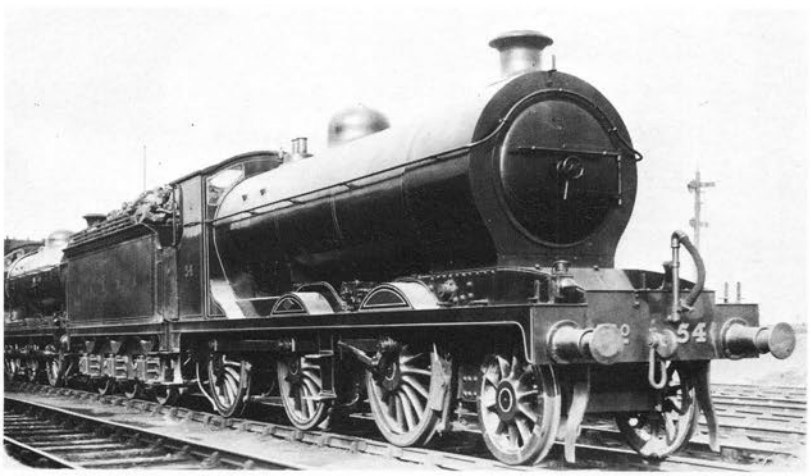
All were sent to Carlisle for the main line goods and were found to be free running, good hill climbers and economical, yet the still suffered so many of the Drummond ills in common with the 0-6-0 and 4-4-0 engines. Never altered to any extent they became more scattered under LMSR ownership, seeing some use on the Settle and Carlisle line while still working from Carlisle, but eventually they worked from many other Scottish sheds, a couple spending some while at Inverness.

All were built in 1915 by North British. Originally they were to have been the '403' class, eight being delivered as Nos 403-10, but they became Nos 33/4, 61, 92-4, 16 and 99 right away, and the other three were Nos 116/7/21; then in 1919 they became Nos 51-61 in order of the former numbers between 16 and 121 and under the LMSR they were renumbered 17820-30.

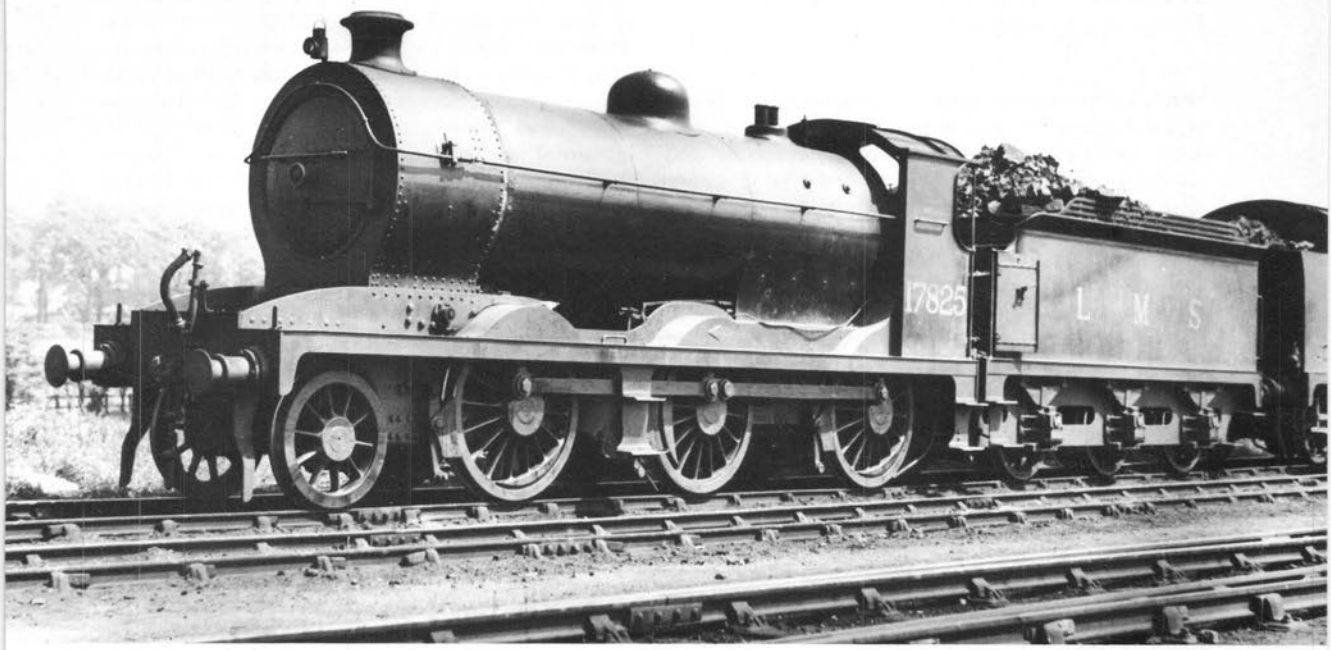
First of class withdrawn: 17824 (9/1935)
Last of class withdrawn: 17829 (3/1947)
None preserved



Above: Outline drawing of the Class 16 (later 51) 2-6-0 express goods engine, introduced in 1915.

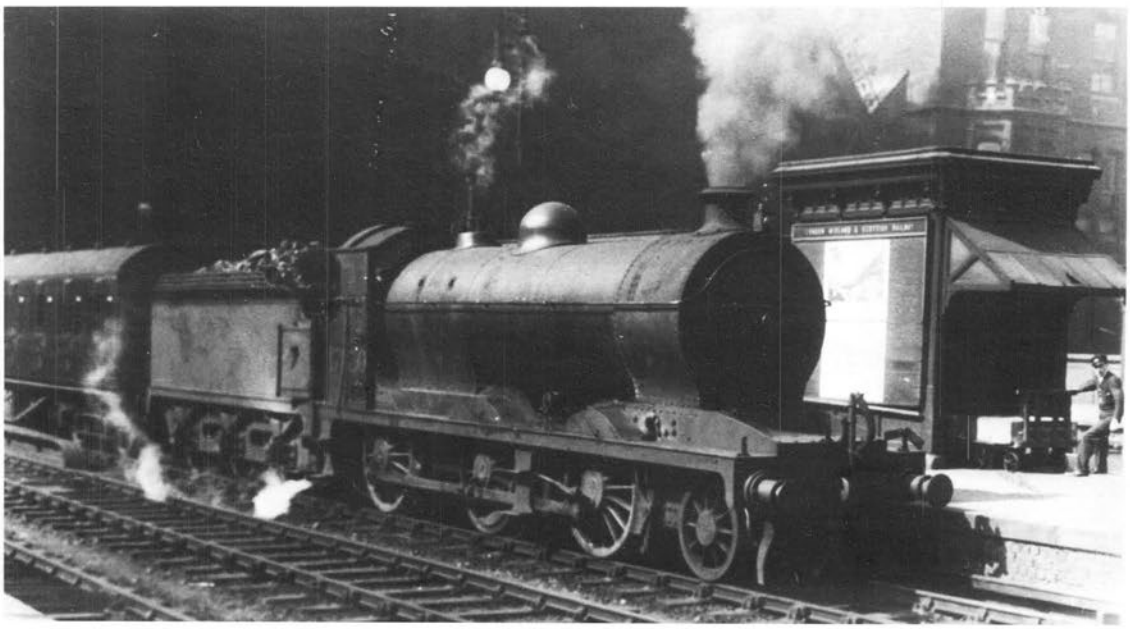


Right: Whereas Churchward on the GWR and Gresley on the GNR had both produced 'Moguls' for mixed traffic work with outside cylinders, Peter Drummond adhered to the inside-cylinder arrangement for his Class 16 express goods engines, which in effect was a 'stretched' 0-6-0 with a leading pony truck. Built by North British in 1915, No 54 is seen here (originally No 406).
Ian Allan Library



Above: In LMSR plain black goods engine livery, No 17825 is seen here, not really altered in appearance since building. The LMSR classified them 4F. *Ian Allan Library*

Below: A nice atmospheric study of 2-6-0 Class 4F No 17830 at the head of a suburban passenger train in Glasgow St Enoch station, August 1936. *Peter Rowledge collection*



0-6-2T Class 45 (later 11) and Class 1*, Load class B; LMSR 3, later 3F Goods Tank Engines

Introduced: 1915 and 1919*
Total: 18 ('45' class), 10 ('1' class)*
(*Whitelegg version)

The GSWR was well known as a railway that made only little use of tank engines; those that it had were small and confined to local passenger and shunting work. Drummond decided that a larger type could make a better job of moving coal in the Ayrshire coalfield, than the old tender engines in that area, and thus produced a version of his HR 'Banking Class' by discarding the bogie in favour of a pair of radial wheels. His successor Whitelegg altered the last batch in some details, and fortunately enginemen and shed staff were spared most of the Drummond paraphernalia, but a steam reverser was fitted. Unlike other Drummond GSWR engines the slide valves were directly driven by the link motion. Superheaters were not fitted, and although fitted with vacuum brakes the class was prohibited from passenger work except by special authority. Once the enginemen had got used to the somewhat smaller water capacity compared with the tender engines they gained general acceptance and were found to have quite a fine turn of speed. The Whitelegg version was fitted for right hand drive.

The 1915-6 engines went to Ayr for the colliery branches and the 1917-9 lots were shared amongst Hurlford, Corkerhill and Ardrossan as well as Ayr. The LMSR sent the class further afield, using No 16902 as a banker at Blair Atholl, but several went to England, being stationed at Workington, Leeds, Stourton, Canklow, Grimesthorpe, Toton and Wellingborough. Four were sold for industrial use, Nos 16903/10 going to McAlpine, the contractors, and Nos 16904/8 to the Ashington Coal Co of Northumberland. During World War 2 the survivors were concentrated in Scotland and one, No 16905, lasted just long enough to become BR property, the only GSWR engine to do so.

The order of renumbering calls for some comment; the LMSR contrary to the usual method ignored the building dates and put them in order of their 1919 GSWR numbers which were done in a way that does not show the reason for departing from the reverse order of age adopted in 1919 for other GSWR classes.

The engines were built, and renumbered, as follows:

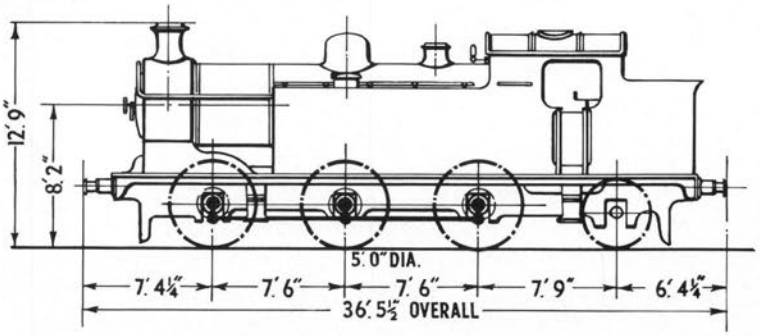
Nos 45, 84, 90/1‡	(23-6)*	North British	1915	16422-5	(later 16922-5)
Nos 122, 284‡	(11, 22)*	North British	1916	16410/21	(later 16910/21)
Nos 101/2	(27/8)*	North British	1917	16426/7	(later 16926/7)
Nos 141-50	(12-21)*	North British	1917	16411-20	(later 16911-20)
Nos 1-10		North British	1919	16400-9	(later 16900-9)

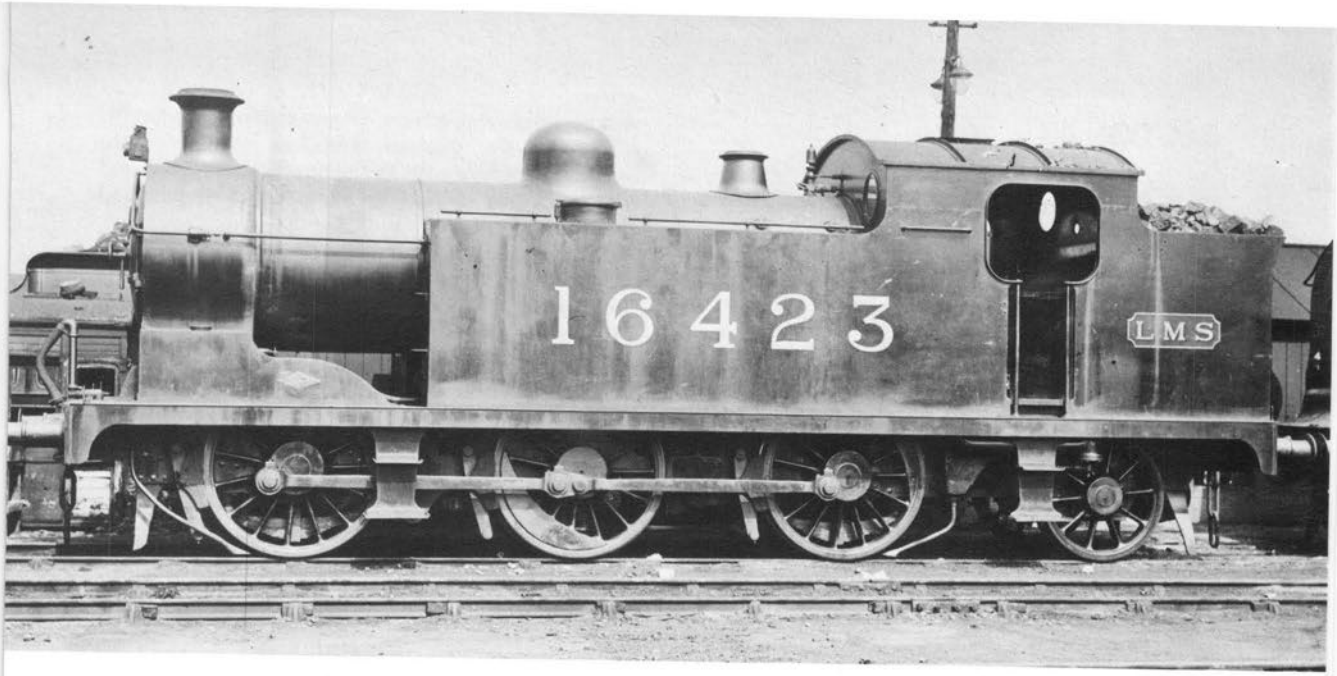
‡Ordered as Nos 16, 61, 116/7/21/2 respectively but delivered as shown.
*1919 numbers.

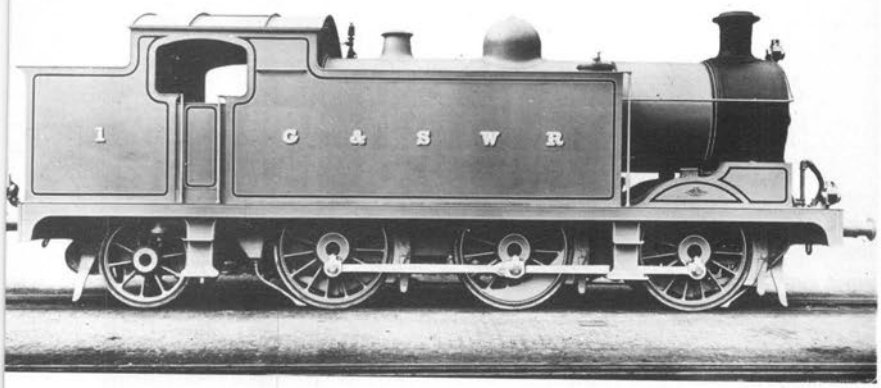
The LMSR numbers were altered in 1926; as shown above.

First of class withdrawn: 16917 (8/1936)
Last of class withdrawn: 16920 Drummond (11/1947), 16905 Whitelegg (4/1948)
None preserved

Below: Outline drawing of the Class 45 (later 11) 0-6-2T goods engine design, introduced in 1915.







Above: Evidently Peter Drummond remembered a unique detail of his HR 0-6-4T when finalising the design of the Class 45 0-6-2T for the G&SWR, because once again he fitted a cover to the safety valves! In early LMSR livery, as their Class 3F, No 16423 (originally No 84) displays the rugged lines of the design, and shows the similarity to the larger HR engines. *LPC*

Centre left: Whitelegg built some further examples of the Drummond 0-6-2T in 1919, known as the '1' class. No 1 is seen here in photographic grey livery when just completed by North British. *LPC*

Bottom left: Four of the 0-6-2T engines were sold by the LMSR for industrial use, and one of these is seen here as Ashington Coal Co No 2. *F. Jones*

SECTION 43

0-6-0T Class 5 (later 322), Load class H; LMSR 2, later 2F Shunting Tank Engines

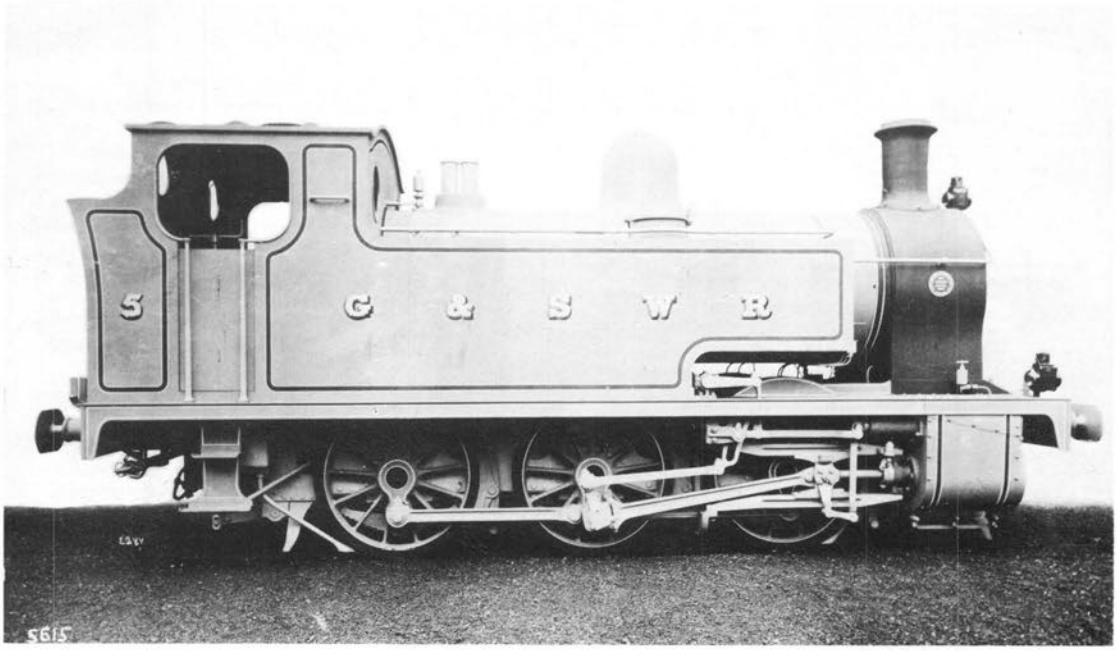
Introduced: 1917
Total: 3

The last new Peter Drummond class was a far cry from the large express types, being a batch of three small shunting engines, not far removed in size from the first Drummond engines built in 1875. Ancient 0-4-0 tender engines were still in use on some sharply curved and very restricted branches in the Ardrossan and Greenock areas, and replacements were required urgently. The result was a simple reliable machine, unencumbered by Drummond's earlier devices. Features to note were outside cylinders with Walschaerts valve gear and the flangeless drivers to allow movement round sharp radius curves.

Two were sold, No 16378 to Carlton Main Collieries and No 16379 to Llay main Colliery, Denbighshire. A happy result of this is that the latter was retained for preservation when it stopped working in 1962.

The three engines were built by North British in 1917; the first numbers were 5, 7 and 9, becoming Nos 22-4 in 1919 and LMSR numbers 16377-9.

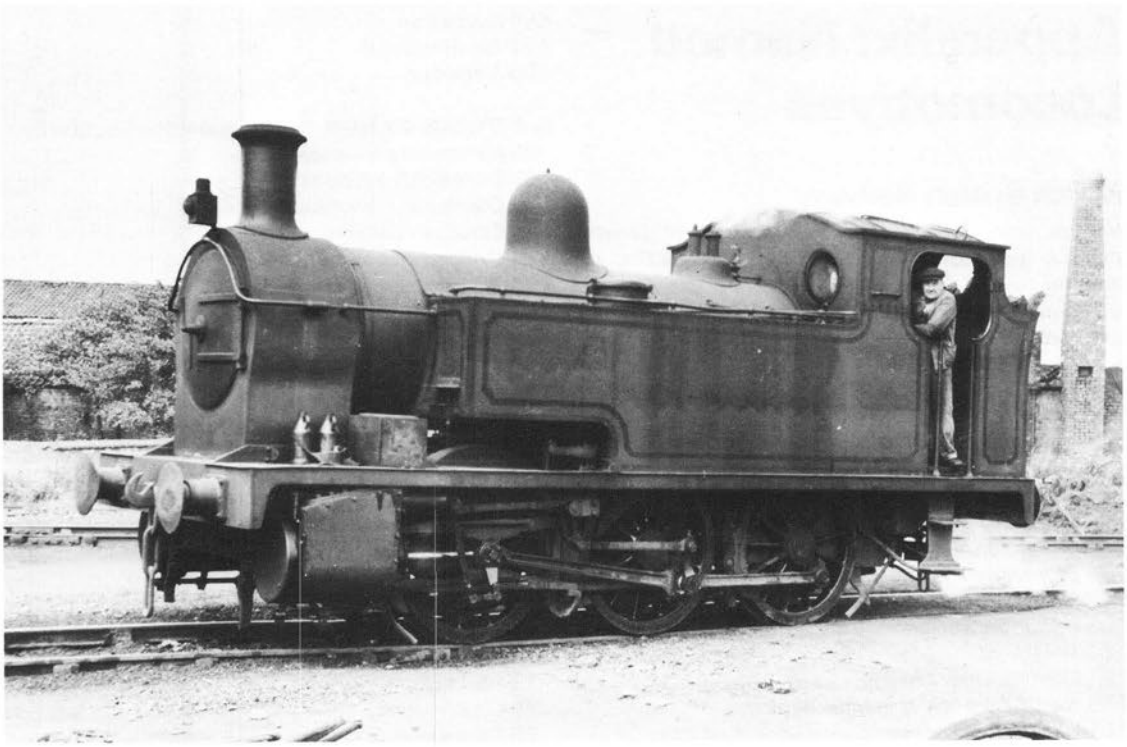
First of class withdrawn: 16377 (4/1932)
Last of class withdrawn: 16378/9 (4/1934)
Example preserved: GSWR No 9 at the Glasgow Museum of Transport.

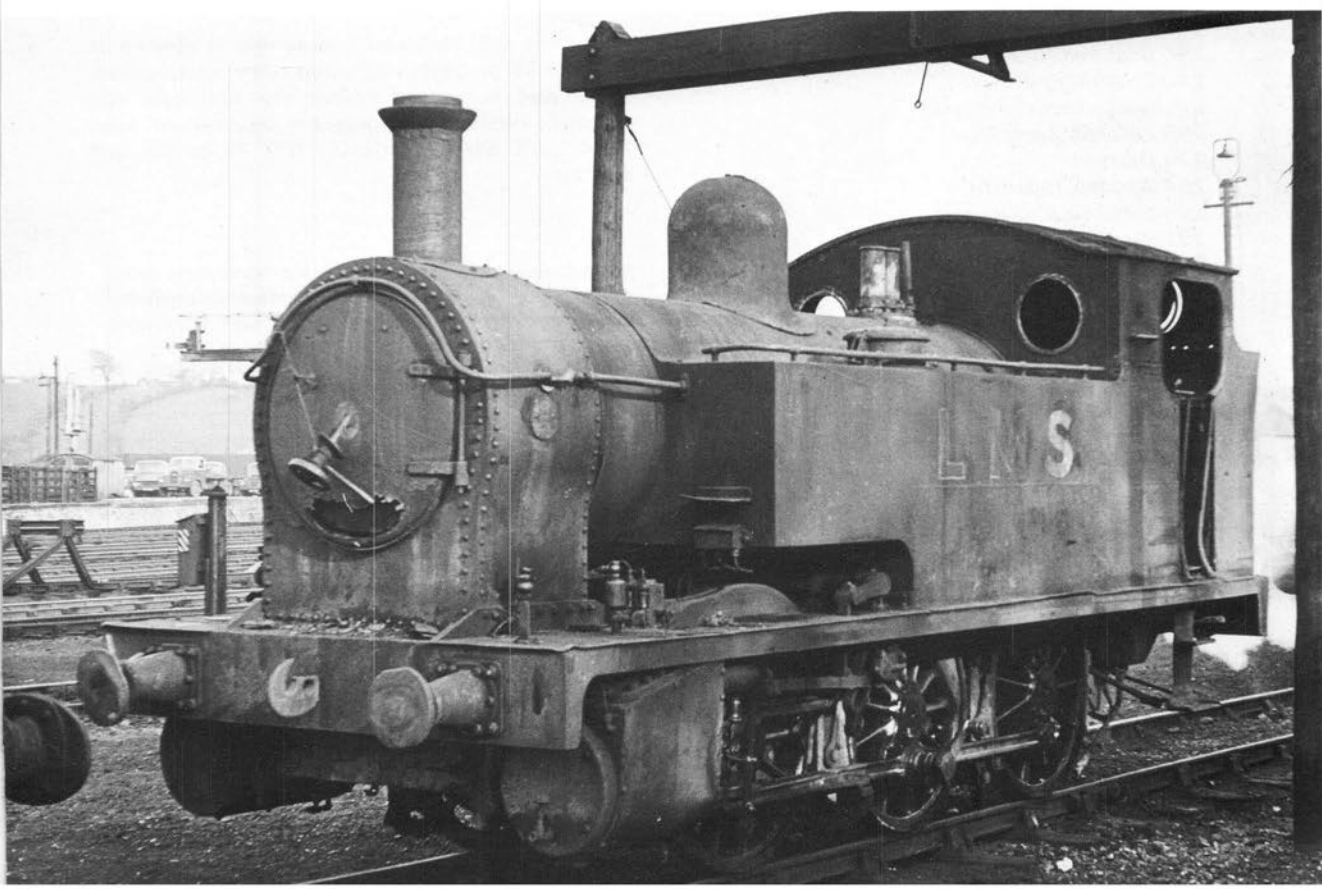


Above: Peter Drummond's final design for the G&SWR, a small 0-6-0T for shunting duties, was quite remarkable in being fitted with outside Walschaerts valve gear, giving them a distinctly 'modern' appearance. The first of the three engines of the Class 5 (later 322,) all built by North British in 1917, is seen in photographic grey. *LPC*

Top right: Two of these useful and attractive little engines were sold by the LMSR for further use by industry. Illustrated is ex-No 16378 at Hartfield Main Collieries (originally at Carlton Main Collieries.) Ross 'pop' safety valves fitted. (Originally G&SWR No 7, then 323.) *F. Jones*

Bottom right: LMSR No 16379 (originally G&SWR No 9, then 324) was the other engine sold out of service, to Llay Main Colliery, Denbighshire. This happily survived intact long enough to be rescued for preservation. With vestiges of its LMS initials revealed on the tankside, and sporting a *very* homemade chimney, No 16379 is seen here at Carnforth shed on 14 May 1963, en route from Oswestry to Glasgow, where it was restored and given an honoured resting place in the Museum of Transport. *Ron Herbert*




LNS

Appendix: Named Locomotives

North British Railway

Names were painted on and soon after Drummond's departure from the NBR the practice of naming ceased. Several were renamed, some more than once, and some names were used on more than one engine.

0-6-0T NBR '165' class (See Section 1)
20 *Haddington*
22 *Langholm*
29 *Granton*
49 *Sunnyside/Gretna*
96 *Arbroath*
97 *Bonnington*
106 *Slamannan/Tayport*
107 *Uddingston/Leuchars*
108 *Hamilton/St Andrews*
123 *Westfield*
151 *Dalmuir/Guardbridge*
158 *North-Berwick*/Meadowbank*
161 *Partick/Buckhaven*
162 *Milngarvie/Loch Leven*
165 *Coatbridge/Boness*
166 *Bothwell/Newport*
240 *Coatbridge/Polton*
241 *Roslin/Penicuik/Bervie*
259 *Bellshill/Queensferry*
274 *Dalkeith*
284 *Airdrie/Grahamston*
295 *Bellgrove/Carnoustie*
297 *Penicuik/Leith*
313 *Clydebank/Musselburgh*
485 *Yoker/Blairadam*

*Note use of a hyphen as applied by NBR.

2-2-2 NBR '474' class (See Section 3)
474 *Glasgow*
475 *Berwick*

4-4-0 NBR '476' class (See Section 4)
476 *Carlisle*
477 *Edinburgh*
478 *Melrose*
479 *Abbotsford*
486 *Aberdeen/Eskbank*
487 *Montrose/Waverley*
488 *Galashiels*
489 *Harwick*
490 *St Boswells*
491 *Dalhousie*
492 *Newcastleton*
493 *Netherby*

0-4-2T/0-4-4T NBR '157' class (See Section 5)
88 *Helensburgh/Kirkcaldy*
89 *Gareloch/Ladybank*
157 *Dumbarton/Markinch*
167 *Cardross/Dundee*
314 *Craigendoran/Lochee*
480 *Roseneath/Burnitsland*

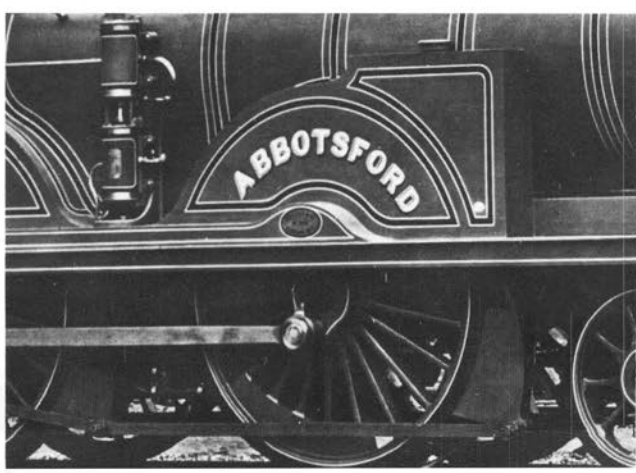
4-4-0T NBR '494' class (See Section 6)
494 *Craigendoran*
495 *Roseneath**
496 *Helensburgh*

*Misspelling of Rosneath (see also 0-4-2T No 480).

4-4-0T NBR '72' class (See Section 8)
19 *Strathendrick*
33 *Bellgrove*
52 *Dirleton*
60 *Airdrie*
67 *Clarkston*
72 *Morpeth*
73 *Rothbury*
74 *Coatbridge**
75 *Sunnyside*
98 *Aberfoyle**

*No 74 is said to have been named *Whiteinch* at first; No 98 probably had some other name at first as it was in service before the Aberfoyle line opened. Two other names are believed to have been used, *Balloch* (possibly Nos 72 or 73) and *Balfron*.

Below: Neither Dugald nor Peter favoured cast brass, or metal, nameplates for their locomotives, although the numberplates were so treated in many instances. Instead they normally used shaded letterforms, painted upon the splasher, or tanksides. NBR No 479 *Abbotsford* shows the style Dugald first used, (pictured here in photographic grey livery). *LPC*



99 *Roxburgh*
101 *Anstruther*
103 *Montrose*
104 *Roslyn*
105 *Penicuik*
109 *Uddingston*
110 *Kinross*
111 *Clackmannan*
147 *Slamannan*
174 *Lennoxtown*
225 *Milngarvie*
268 *Bothwell*
294 *Clydebank*
299 *Hamilton*

Caledonian Railway

4-4-0 CR '66' Class (See Section 10)
79 *Carbrook* (from new, but later removed)
124 *Eglington* (1890 to about 1906-7)

London & South Western Railway

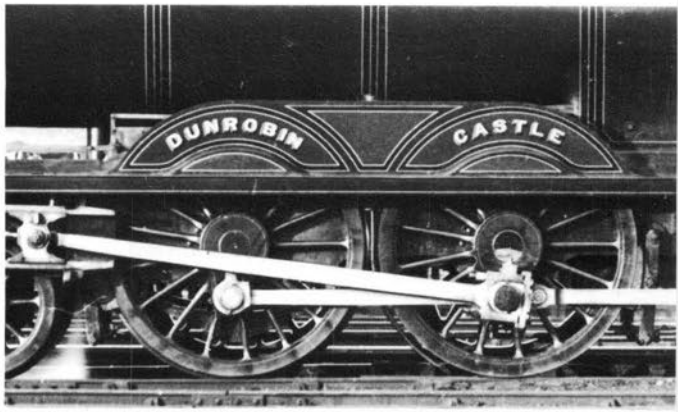
0-4-0T LSWR 'K14' class (See Section 27)
746/101 *Dinan*
747/147 *Dinard*

Highland Railway

4-4-0 HR 'C' or 'Ben' class (See Section 32)
1 *Ben-y-Gloe** (later *Ben-y 'Gloe*)
2 *Ben Alder*
3 *Ben Wyvis*
4 *Ben More*
5 *Ben Vrackie*
6 *Ben Armin*
7 *Ben Attow*
8 *Ben Clebrig*
9 *Ben Rinnes*
10 *Ben Slioch*
11 *Ben Macdhui*
12 *Ben Hope*
13 *Ben Alisky*
14 *Ben Dearg*
15 *Ben Loyal*
16 *Ben Avon*
17 *Ben Alligan*
38 *Ben Udlaman*
41 *Ben Bharch Ard*
47 *Ben a'Bhuird*

*Named *Ben Nevis* at time of building, but altered before delivery.

4-6-0 HR 'A' or 'Castle' class (See Section 34)
26 *Brahan Castle*
27 *Thurso Castle*



Above: For the HR 'Castle' class 4-6-0, Peter placed the names over two splashers, as seen here on No 142 *Dunrobin Castle*. The LMSR later simplified the style. *LPC*

28 *Cluny Castle*
29 *Dalcross Castle* (No 43 until 1913)
30 *Dunvegan Castle*
35 *Urquhart Castle*
50 *Brodie Castle*
58 *Darnaway Castle*
59 *Foulis Castle*
140 *Taymouth Castle*
141 *Ballindalloch Castle*
142 *Dunrobin Castle*
143 *Gordon Castle*
144 *Blair Castle*
145 *Murthly Castle*
146 *Skibo Castle*
147 *Beaufort Castle*
148 *Cawdor Castle*
149 *Duncraig Castle*

0-4-4T HR W or 'Passenger Tank' Class (See Section 36)
25 *Strathpeffer*
40 *Gordon Lennox*

4-4-0 HR U or 'New Ben' Class (See Section 37)
60 *Ben Bhreac Mhor* (later *Ben Bhreac 'Mhor*)
61 *Ben na Caillich* (later *Ben na Caillach*)
62 *Ben a 'Chaoruinn* (later *Ben Achaoruinn*, then *Ben a 'Chaoruinn*)
63 *Ben Mheadhoin*
64 *Ben Mholach* (No 66 until 1909)
65 *Ben a 'Chait* (No 68 until 1909)

Bibliography

The following books and periodicals, which were referred to in the course of compiling this pictorial history, are thoroughly recommended to the reader in search of further information about Dugald and Peter Drummond, and their locomotives:

Bradley, D. L.; *LSWR Locomotives*; Railway Correspondence & Travel Society.

Campbell Cornwell, H. J.; *Forty Years of Caledonian Locomotives 1882-1922*; David & Charles.

Hamilton Ellis, C.; *North British Railway*; Ian Allan Ltd.

Hamilton Ellis, C.; *Twenty Locomotive Men*; Ian Allan Ltd.

Smith, D. L. *Locomotives of the Glasgow & South Western Railway*; David & Charles.

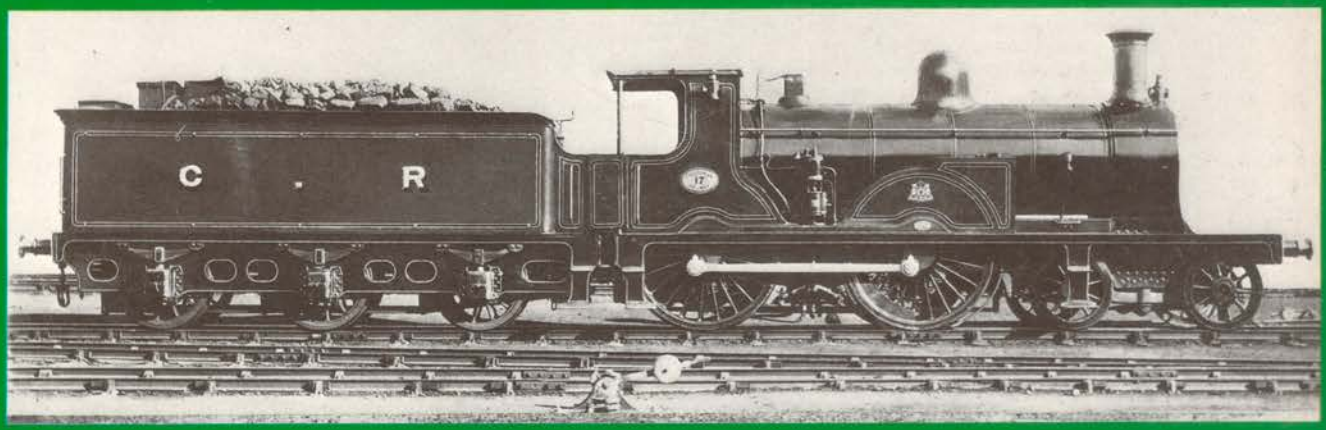
Tatlow, P.; *Highland Locomotives*; Oxford Pub Co.

RCTS (edit); *Locomotives of the LNER* (partworks); Railway Correspondence & Travel Society.

SLS (edit); *Locomotives of the North British Railway 1846-1882;* Stephenson Locomotive Society.

Also various issues of the *Locomotive Magazine*.

Below: A night-time tableau on the footplate of a Southern Region Class 700 0-6-0, as the crew get the 'right away'. *E. C. Griffiths*


C . R

BRITISH RAILWAYS
55053